TNO

GEZONDHEIDSORGANISATIE T.N.O.
ORGANIZATION FOR HEALTH RESEARCH T.N.O.

The Health of the Aged

An investigation into the health and a number of social and psychological factors concerning 3149 aged persons in The Netherlands, carried out by 374 general practitioners under the direction of the Organization for Health Research T.N.O.

(With a summary in Dutch.)

by

R. J. VAN ZONNEVELD, M.D.

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VAN GORCUM - ASSEN

The continually increasing number of the aged and the intensifying interest in social and medical problems have created a growing need for knowledge concerning the older part of the population.

Since health is obviously so often a factor of decisive importance at more advanced ages, the Organization for Health Research T.N.O., the organization which carries out scientific research in the field of public health in The Netherlands, undertook the present investigation with the hope that it would provide directions for more specific gerontological research and more effective health care of the aged. Thanks to the generous co-operation of almost 400 general practitioners, more than 3100 aged subjects, and many municipal authorities and health insurance Boards, it was possible to collect a large body of medical, psychological, and social data in eight nationally representative samples of persons of 65 years and older.

Taken as a whole, these data give an insight into the prevalence of many complaints and abnormalities and into the role which certain conditions play in relation to them. This has already made it possible to indicate a number of measures which can promote the welfare of the aged.

This report gives a description of the methods and development of the survey, as well as a detailed account, with about 150 Tables, of the results. A concluding chapter contains a discussion of the most important conclusions drawn from these results.

R. J. van Zonneveld, M.D.

THE HEALTH OF THE AGED

AN INVESTIGATION INTO THE HEALTH AND A NUMBER
OF SOCIAL AND PSYCHOLOGICAL FACTORS
CONCERNING 3149 AGED PERSONS IN THE NETHERLANDS,
CARRIED OUT BY 374 GENERAL PRACTITIONERS
UNDER THE DIRECTION OF
THE ORGANIZATION FOR HEALTH RESEARCH T.N.O.

PUBLISHED FOR THE ORGANIZATION FOR HEALTH RESEARCH T.N.O. BY
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WOORD VOORAF

De denkende mens heeft zich altijd beziggehouden met het verschijnsel van het verouderen. De bejaarde werd, afhankelijk van de tijd en het cultuurmilieu waarin hij leefde, zeer verschillend beoordeeld. Maar nog nimmer was het ouder worden zulk een praktisch probleem als in de hedendaagse Westeuropese cultuurgemeenschap.

De gerontologische onderzoekingen liggen op meerdere velden van wetenschappelijk onderzoek. In het werk, dat thans een voorlopige afsluiting vond, worden de vragen omtrent de gezondheidstoestand en de sociaal-psychologische factoren aan een veelomvattend onderzoek onderworpen.

De gerontoloog was ten deze aangewezen op voor-wetenschappelijke gegevens en de ruwe empirie. Wel zijn er reeds voortreffelijke onderzoekingen betreffende het oud-worden en het oud-zijn verricht, maar nog steeds ontbrak voldoende documentatiemateriaal omtrent de algemene gezondheidstoestand en de sociaal-psychologische momenten in het leven van de boven-de-65-jarige.

De overweging van de Adviescommissie T.N.O. inzake gerontologische vraagstukken, om het Bestuur der Gezondheidsorganisatie T.N.O. voor te stellen het daarheen te leiden, dat deze standaardgegevens werden verkregen, werd reeds meer dan 7 jaar geleden gegeven. De arbeid, welke uit het toen genomen besluit voortkwam, verkreeg in het hier voor ons liggende werk een voorlopige afsluiting.

Dr. Van Zonneveld, die reeds tevoren op het terrein van de gerontologie baanbrekend werk had verricht, heeft de veelomvattende taak aanvaard om in een breed opgezet onderzoek inzake de gezondheidstoestand van de boven-de-65-jarige de verkrijgbare gegevens te verzamelen en de sociaal-psychologische factoren, welke met de meerdere of mindere gezondheidstoestand correleren, te ordenen.

Wie dit boek ter hand neemt en zich realiseert de wijze, waarop werd gewerkt, en de resultaten, die werden verkregen, zal in toenemende mate waarderen, wat hier tot stand kwam. Met taaie volharding en voort-

durende controle en zelfcontrole werden de verkregen gegevens geordend en wetenschappelijk verantwoord.

Dank zij de medewerking van vele artsen en bejaarde proefpersonen, dank zij ook de hulp van de Gezondheidsorganisatie T.N.O. kon dit geschieden. Maar last but not least dank en waardering voor dr. Van Zonneveld, die in deze arbeid zoveel waardevol documentatiemateriaal kon bijeen brengen.

PROF. DR. L. VAN DER HORST

PREFACE

Thinking man has always had to contend with the phenomenon of aging. Attitudes towards the aged, depending on period and cultural milieu, have differed widely. But never has becoming old been such a concrete problem as in present day Western European society.

Gerontological investigations span many fields of scientific research. In the work which concludes for the time being with this volume, the problems of the state of health and the socio-psychological factors in aging were comprehensively studied. Up till now the gerontologist had to depend on non-scientific data and simple empiricism. Although there have been excellent investigations of aging and old age, we still lacked sufficient material concerning the general health and the socio-psychological influences in the life of those who are over sixty-five.

The recommendation of the Advisory Committee T.N.O. on Gerontological Problems to the Board of the Organization for Health Research T.N.O. that these basic data be collected was made more than seven years ago. The work which resulted from this decision has been partially concluded with this publication. Dr. Van Zonneveld, who had already done pioneering work in the field of gerontology, undertook, in a broadly conceived investigation into the health of those over sixty-five, to collect the available data and to systematize the socio-psychological factors correlated with health. Those who take this book in hand and realize how this work was done and what results were obtained will increasingly appreciate what has been accomplished. With untiring perseverance and unremitting scrutiny, the collected data were analyzed and scientifically evaluated. Thanks to the cooperation of numerous general practitioners and aged subjects, and thanks to the assistance of the Organization for Health Research T.N.O., it has been possible to carry out this project. And last but not least, thanks and appreciation are due to Dr. Van Zonneveld, who through this effort was able to bring together so much valuable material.

PROF. L. VAN DER HORST, M.D.

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* These physicians participated in the pilot study. The following general practitioners also co-operated on parts of the pilot study: D. K. HEERINGA, T. A. HILARIUS, MR. E. W. HOENDERS, W. J. HUYGEN, V. WINKLER PRINS.

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WESTENDORP, J. D. VAN *	Moordrecht
WESTERMANN, G. L. J.	Bemmel
WESTERWEEL, F. J. C.	Spaarndam
WESTHOFF, C. H. A.	Amsterdam
WETERMAN, TH. J.	Borne (O.)
WEVER, R. DE	Heerlen
WEIJENBORG, A.	Deurne (N.B.)
WIBAUT, F. P.	Amsterdam
WIECHEN, H. J. VAN	Zwolle
WIERINGA, J. J.	Middelharnis
WIJK, C. G. VAN	's-Gravenhage (The Hague)
WIJK, P. M. VAN	Hilversum
WIJN, W. DE	Ridderkerk
WILHELMIJ, DR. M.	Utrecht
WINKEL, A. W. OP DEN	Velp
WIT, DR. J. C. DE	's-Gravenhage (The Hague)
WIT, K. T. DE	Wassenaar
WOERKOM, W. VAN	's-Gravenhage (The Hague)
WOLFF, C. G.	Neede
WOLTRING, L. M.	Weesp
WONG LUN HING, F. J. H.	Rotterdam
WOORTMAN, P. J.	Bathmen
YBEMA, S. R.	Schoonebeek
YPMA, F. S. M.	Schaesberg
ZADELHOFF, G. VAN	Beesd (Gld.)
ZIJP, A. L.	's-Gravenhage (The Hague)

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INTRODUCTION

> The most important single factor facing the medical profession today, is the care of the aged. Medicine is largely responsible for the increasing number of people over 65, so we must solve the medical and help solve the economic problems which result.
>
> D. B. ALLMAN, M. D., President AMA 1957.

The Advisory Committee T.N.O. on Gerontological Problems has, since 1953, made possible various studies concerning aging and old age by advising the Board of the Organization for Health Research T.N.O. favourably on requests for subsidies for work in this field. It was the opinion of the Committee, however, that the Organization for Health Research T.N.O. should also itself undertake this kind of investigation. They considered a general study of the health of the aged to be one of the most important projects which the Organization for Health Research could include in its programme. The information obtained by such a survey could then serve as a basis for other, more specialized, investigations.

From the very beginning, the Advisory Committee was of the opinion that the actual investigation could best be carried out by the general practitioners of the individuals to be studied. In 1954 a number of general practitioners were found willing to co-operate immediately in a pilot study. The results of this pilot study were such that a large-scale, nation-wide study was decided upon. In the course of more than two years, from the middle of 1955 to the autumn of 1957, some 375 physicians examined almost 3150 persons of 65 years of age or older. The enormous amount of data collected was processed by the Statistics Department T.N.O. during 1958 and 1959. The physician-investigators then took part in the evaluation of the results.

It need hardly be said that this extensive study could only succeed through the disinterested contribution of this group of physicians. This acknowledgement is accompanied by profound gratitude. Thanks are

also due to the Town Councils of many municipalities [1] and almost all of the health insurance groups [2] in the country, for the equally generous and disinterested administrative help extended by them, and to the aged subjects themselves, who were willing to undergo examinations which often lasted many hours.

[1] A municipality is in The Netherlands the smallest administrative division within the Provincial governments.
[2] See appendix IV.

PART I

PLAN, ORGANIZATION AND METHODS

CHAPTER I

PLAN AND PILOT STUDY

A. THE PLAN

Objective: The primary objective of the investigation was to obtain a more exact picture of the general health and symptoms of disorders affecting the health of persons of 65 years of age and over in The Netherlands. It was also hoped that the results would provide a certain insight into the question of periodic physical examination of this older age group by general practitioners. Lastly, the inclusion of general practitioners in scientific research was in itself considered to be of great importance: among other factors, participation in such a gerontological study might for many of these physicians lead to a greater interest in medical research in general and in particular the health of the aged.

Methods: The basic concept used as a starting-point for the study was that a general practitioner could perform the examination in his own consulting room or, if necessary, for a large part in the subjects' own homes. In addition to a series of findings from an extensive physical examination of a nature more or less comparable to that ordinarily made in connection with life insurance, certain data of a social nature was to be collected and the investigator should form an idea of the psychological state of the subject. As a beginning, a small working-group of physicians were to test the effectiveness of the separate sections of a drafted questionnaire by using it with a few aged patients in their own practices. On the basis of the experience obtained in this way, a larger, preliminary group of general practitioners could undertake a pilot study with a more definitive questionnaire. This pilot study would also have to serve to determine whether it would be possible to obtain a reasonably reliable random sample. The members of the larger working-group would, finally, have to give their opinions on the question of whether such an investigation could be made on a large scale. If the answer were positive, a large number of general practitioners would have to be stimulated to partici-

pate in the study. The difficulty would then of course arise – even more than would have been the case with the preparatory work-group – that this large number of participants would increase the difficulties of establishing a uniform method. A partial solution of this problem would require the forming of a number of regional, manipulable work-groups, in order to promote a reasonably uniform procedure in carrying out the study.

The above conveys in a very abbreviated form a few general points involved in the plan for the survey. A number of aspects of these points will be discussed in more detail in the following paragraphs.

Investigators: For various reasons it was decided to commit the investigation to the aged individuals' own physicians. These physicians would inherently have a better idea of the general health of the subjects and of other circumstances involved than would any other medical investigator. The choice also fell particularly on the general practitioner because as a whole he was the most likely to have the subject's confidence. This consideration weighed heavily in relation to certain of the questions because of their confidential nature. The physicians who participated in the preparatory phase of the investigation were confirmed in this conclusion by their own experience. They were further of the opinion that, on the basis of experience gained in other studies of the health of aged individuals as well as their own, superficial investigation, i.e. consisting of only a few questions and a limited physical examination, would not supply the desired data. For many reasons which will not be gone into here, they also considered unsatisfactory an arrangement by which each physician would carry out only a part of the investigation, the rest being done by special investigators, or one by which the whole study would be done by a small mobile team of physician-investigators. Moreover, the Organization for Health Research T.N.O. considered it of great importance to find out whether it would actually be possible to include a large body of general practitioners in scientific research projects. Finally, it was hoped, as has already been mentioned, that the inclusion of the general practitioner in this study of the aged would have the effect of giving a number of them an increased interest in geriatric problems. For the general practitioner is among those who have already begun to feel strongly the consequences of the aging of the population.

The subjects: It was necessary for a variety of practical reasons to limit the group of people to be studied. The first thing to be done, of course,

was to determine who was to be labelled "aged." For convenience, the usual retirement age for men in The Netherlands, 65 years, was taken as the lower limit. This otherwise arbitrary age limit unquestionably leads to many difficulties, but another equally uncomplicated solution is not available. In the second place, it was agreed to consider eligible for the study all aged persons who lived in their own or someone else's private home or in the smaller old-age homes, thus still availing themselves of the services of their own physician. As a result, those individuals in institutions of whatever nature, exclusively attended by physicians other than their own (previous) family doctor, were excluded from the survey. This limitation also had disadvantages, since it can be expected that through it many of those most physically or mentally disturbed old people could not be included, but here too the reason is obvious. A final limitation was that only white persons or those of mixed white descent were to be investigated (i.e. no Ambonese, for example) in order to insure a certain degree of homogeneity of the sample.

Directorship: The general procedure of the investigation was under the supervision of the Advisory Committee on Gerontological Problems T.N.O. A few members of the committee took an active part in a number of the preliminary activities, in particular the discussions of the pilot work-group of physicians. The advisor and co-ordinator of gerontological research naturally took part in all the discussions. The latter (the author) was charged with the overall day-to-day direction.

B. THE PILOT STUDY

Preliminary work-groups

After the co-ordinator had made a tentative, condensed scheme of the survey and a tentative questionnaire, the small preliminary work-group began its activities. This work-group consisted of general practitioners who had some time before declared themselves willing to participate in socio-medical research. A small number of them, most of whom also practiced in the central part of the country, were now requested to assist in the preparations for this large-scale project. After some time, it was found desirable to have a larger pilot work-group continue and round off the preparatory work. The names of those who collaborated in these phases of the investigation are indicated in the complete list of participants which follows the preface to this report.

The small preliminary work-group

It was the task of this group to subject the tentative questionnaire to critical discussion and then to test the applicability of its various parts in actual practice. This could at the same time provide some idea of the co-operativeness of the aged.

The small work-group met in Utrecht on January 27th, March 19th, April 9th, and May 20th, 1954. It dealt first with the somatic section of the questionnaire. Before the form designed for this purpose was used in the first pilot study, it was considered and tested by two general practitioners in the city of Groningen. After that, from the middle of February until the middle of March 1954, nine physicians undertook the physical and psychological examination of twenty-one aged persons. The latter were so chosen that their co-operation could be counted on in advance. During the first meeting, ideas were exchanged on the general plan and procedure. At the second meeting it was already possible, on the basis of a small amount of data which had already been obtained, to discuss the results of the first part of the pilot study. The outcome of practical experience was, of course, taken into account in giving the questionnaire its final form. With regard to the psychological section, the work-group decided to try to combine with it part of a biographical anamnesis, in accordance with the scheme used for this purpose by the psychosomatic work-group in the Wilhelmina Gasthuis (Hospital) in Amsterdam. There was almost unanimous agreement that the taking of this biographical anamnesis in its original form would be too onerous for the physicians because of their lack of experience and time. The Institute of Social Medicine of the University of Utrecht gave its assistance in working out the combination of the psychological and biographical parts of the questionnaire. Five physicians of the group attempted to carry out this part of the investigation with a few aged subjects chosen by them (in all, nine individuals). Their experience confirmed the fear which had been expressed in advance by some, that the combination of two dissimilar investigations in one questionnaire would lead to unsatisfactory results. It was therefore decided to return to the original plan for the psychological study, but to add to it the simple memory test taken from the questionnaire used in a socio-medical investigation of 3000 aged persons made in 1952 by Van Zonneveld in the city of Groningen.[1]

The aged people investigated in the pilot study had all given their full

[1] Zonneveld, R. J. van, Gezondheidsproblemen bij bejaarden (Health problems of the aged: Results of a socio-medical study of 3000 persons of 65 years of age and over in the city of Groningen), with an English summary. Kon. v. Gorcum, Assen 1954.

co-operation. The question was then, however, how a non-selected group of aged people would react to a request for co-operation. To determine this, and for other considerations to be discussed later, it was therefore necessary to begin an actual pilot study next. To this end, the small work-group was expanded by the addition of a number of physicians to become the so-called large work-group, because the members of the original group all expressed the wish to participate in the main investigation as well.

The large preliminary work-group

The fifteen doctors who first came to strengthen the ranks were for a part general practitioners who had been recruited by the original participants and for a part physicians who had previously indicated their readiness to do socio-medical investigations.

The task of the large group, which in the course of the following months lost some members, was in fact to carry out the definitive project on a small scale. Its work was to attempt to obtain a good random sample of the aged to be studied, to test the questionnaire in practice, and to get an idea of the degree of co-operation given by these aged subjects. In other words, the pilot study was to find out whether a large-scale, nation-wide investigation of the aged was feasible.

The expanded group met three times, on June 18th, October 1st, and November 26th of 1954. During the first meeting, after some items of information concerning the nature and plan of the investigation had been communicated, the questionnaire was explained and the object discussed, among other points the exact determination of the sample. During the following months the participants each examined two subjects.

The selection of these subjects was made with the help of data obtained from health insurance groups (Sickness Funds), Municipal Councils or other local authorities, or the physicians' own records. For relevant details, see Section IIc concerning the determination of the sample.

During the second meeting of the expanded group, a review was given of the most important data from the 23 questionnaires sent in by 12 physicians. On the basis of this, a number of small changes were made in the questionnaire.

In the period between the second and third meetings, 17 physicians examined 46 more subjects. The data from the total of approximately 70 people studied and the experience gained in obtaining a statistically reliable sample formed the subject of the discussions at the last meeting.

The work-group then came to the conclusion that an extensive investigation of the aged by general practitioners could indeed yield much important material and that such an investigation was both desirable and feasible. Anticipating the decision of the Organization for Health Research T.N.O. to undertake this survey, the work-group took up consideration of the organization of such a survey. They concentrated on the problem of recruiting a large number of general practitioners to participate, on instruction of the investigators, and providing with information the public and private officials whose co-operation was indispensable with regard to the determination of the sample, as well as the problem of guaranteeing that the procedure used by the physicians would be as uniform as possible. Much effort was also expended on the reporting of the meetings, by which the participants were regularly kept up to date concerning the progress of the preparations.

CHAPTER II

ORGANIZATION OF THE NATION-WIDE SURVEY

A. OBTAINING THE NECESSARY CO-OPERATION

1. The physician-participants

The Statistics Department T.N.O. had in the meantime reported that on the basis of the composition of the provisional investigation scheme it would in any case be desirable to have 3000 filled-out forms so that in due course the necessary statistical calculations could be made. Since on the basis of their experience the members of the large work-group considered it reasonable for each participating physician to examine at least 10 subjects, this meant that at least 300 general practitioners would have to give their co-operation if the investigation was to be successful. Because there would undoubtedly be a relatively high percentage of participants who for all kinds of reasons would drop out both before and during the actual study (in the pilot study 7 of the 25 dropped out), this figure had certainly to be raised to about 400. An even larger number of collaborators would obviously be still more effective, because increasing the number of questionnaires would perhaps make a further division of certain data possible on some points. In any case, an appeal would have to be made to several hundred physicians.

It seemed no small task to persuade so large a number of often very busy general practitioners to take part in this investigation. The first call for co-operation, made by the chairman of the Organization for Health Research T.N.O. [2] was placed in the journal *Medisch Contact* (Medical Contact) [3] for December 9, 1954. As a result of editorial circumstances, the article by the co-ordinator and the advisor [4] in which the plan, procedure, and organization were explained in more detail only appeared

[2] Polman, A.; Medewerking gevraagd voor wetenschappelijke onderzoekingen, met onderschrift van (Request for co-operation in scientific research, with endorsement by G. Dekker); Medisch Contact, 1954, 9, 754.

[3] The weekly publication of the Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst (Royal Netherlands Medical Association).

[4] Zonneveld, R. J. van, & J. Groen; Gerontologisch onderzoek door de Gezondheidsorganisatie T.N.O., met bijschrift van C. Landheer; Med. Contact, 1955, 10, 76-78.

in the issue of February 3, 1955. It was emphasized that in the opinion of the work-group it would be necessary to expect of each doctor who wished to participate in the project that he or she examine 10 aged persons from his or her own practice, and that experience had shown that this would take about 3 to 3½ hours per subject. In the February 17th issue of *Medisch Contact* attention was again focused on the investigation by enclosing an application for participation printed on a post card. Strong support was provided by the recommendations of the Secretary-Treasurer of the *Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst* (Royal Netherlands Medical Association) and from the chairman of the *Landelijke Huisartsen Vereniging* (National Assocation of General Practitioners). These recommendations were the more necessary because in the same issue of *Medisch Contact* which carried the information about the project, two negative reactions [5] were printed which, among other things, criticized the fact that the co-operation of the physicians would not be remunerated. The question of remuneration had already been the subject of extensive deliberations in the large work-group. After ample discussion this group came to the conclusion that only expenses actually incurred by the investigators for the project should be reimbursed.

While leading figures in the Netherlands medical world encouraged participation in the project, an attempt was also made to stimulate and maintain local interest in it. This was done by a letter (sent by the chairman of the *Landelijke Huisartsen Vereniging*) to the chairmen of the local branches of the "*Maatschappij*" (Association), by lectures given by the co-ordinator at several branch meetings, and by the attempts on the part of some of the physicians of the work-group to increase the number of members in their own branches. An offer to various branches by the Association to personally inform them locally about the investigation received almost no response. Written information, however, was read before meetings in a few places.

After mapping the distribution of participants throughout the country in April of 1955, it appeared that in some areas or cities co-operation was relatively limited. General practitioners in these localities who had not yet listed themselves as participants were then sent a personal letter. In this letter a few questions and objections which had arisen in the course of the preceding months were discussed.

In the beginning, all those who enrolled received within as short a time

[5] Nijenhuis, W. T. P.; Naar aanleiding van de oproep T.N.O. in Medisch Contact van 9 december, and Erdbrink, H. H.; Appreciatie van de artsenstand, met naschrift op beide "ingezonden stukken" van de redactie Medisch Contact, 1955, 10, 80-83.

as possible a written, personal confirmation, in order to sustain their interest and at the same time request additional information. When the number of enrolments rose, this practice could not be maintained and instead new participants first received almost identical typed, and later stencilled, letters, although these often had a personal note added. In all these letters it was urged that other colleagues be stimulated to take part in the investigation.

The final result of the successive series of attempts to obtain an adequate number of participants was that approximately 500 general practitioners were in principle prepared to join in the survey. This number later shrank appreciably, and the measures subsequently required to maintain the level will be discussed below.

2. *The municipal authorities and health insurance groups*

It was essential for a good sample that the general practitioner either had a complete record system for his practice which showed the age of his patients or that he could obtain the necessary data from either the health insurance group or groups whose members he treated or the town clerk's office of the place in which he practiced. Of the sources from whom information was sought for the pilot study, i.e. 14 municipal offices and approximately 30 health insurance groups or their local branches, nearly all gave their co-operation. In as much as it was established that for a nation-wide investigation the assistance of a great many of these sources would be required, it was clear that it was of the greatest importance to obtain this help. This made it necessary to inform these public and private authorities as broadly as possible about the project. This information, which concerned the objectives, nature, and scope of the investigation and the indispensable role of these authorities in it, was reported among other things in the health insurance organs *De Ziekenfondsgids* [6] and *Het Ziekenfonds* [7] (The Health Insurance Guide and Health Insurance) and in the journals *De Nederlandse Gemeente* [8] (The Netherlands Municipality) and *De Bevolkingsboekhouding* [9] (Population Records). The Groningen and Friesland branches of the *Vereniging voor Bevolkingsboekhouding* (Association for Population Records) were also given oral information in several lectures on the problems of the aged.

[6] Zonneveld, R. J. van; Gerontologisch onderzoek door huisartsen, De Ziekenfondsgids, 1955,9,58-61.
[7] Zonneveld, R. J. van; Gerontologisch onderzoek door huisartsen, Het Ziekenfonds, 1955,29, 55-57.
[8] Zonneveld, R J. van; Gerontologisch onderzoek door huisartsen, De Nederlandse Gemeente, 1955,9, 137-139.
[9] Zonneveld, R. J. van; Gerontologisch onderzoek door huisartsen, De Bevolkingsboekhouding, 1955, 181,53-55.

When by the end of April 1955 almost all the municipalities and health insurance groups from whom data would be required for the determination of the sample were known, an official letter was sent requesting them to extend the necessary assistance to the general practitioners participating in the investigation. The chairman of the Organization for Health Research T.N.O., in a personal letter to some of the leading officials of the three large federated health insurance organizations, asked their particular attention to the official request.

As the investigation progressed, an extensive correspondence and in some cases personal consultation with health insurance officials was required to have the necessary information made available to the investigators within a reasonable amount of time. This subject will be discussed further, but it gives great satisfaction to be able to state here that in almost all cases the recipients of the official letter were most willing to extend their co-operation.

3. The aged

It is self-evident that the willingness of the subjects of the investigation, the aged, to let themselves be studied was essential. Various studies in this and other countries had shown that in general the reaction of this population group to being investigated was not so adverse as had sometimes been expected, but in the present case among other factors an actual physical examination was involved which might indeed cause some people to object. It was for this reason that it was considered so important that the individual's own physician do the examination. It was also left to the investigating physicians themselves to decide how they would approach the people who were designated as subjects. In many cases this came about on the occasion of a visit during which the doctor told his candidate something about the survey. A few investigators did this by means of a short letter. In many cases it was possible to bring up the subject during an ordinary house or office visit. Most of the aged patients were quite ready to take part, indeed they were sometimes even very anxious to do so. It was not unusual for persons who were not considered for the investigation themselves to wish to be one of the "lucky ones." There were, of course, aged individuals who did not wish to participate. This question of refusal will come up again later.

Since it seemed useful to inform the aged not only personally through their physicians but also more generally, the investigation was made the subject of several articles on old age problems in publications read by

many of them, *Staatspensioen* (Government Pension) and *Onze Bejaarden* (Our Aged) as well as of a radio talk on the medical aspects of the old-age problem. In this connection it should be added that on its own initiative one of the big morning newspapers wrote up (not entirely accurately) the survey, which was by then in progress, and short pieces on it appeared in some other newspapers with large circulation.

B. ESTABLISHING UNIFORM RESEARCH METHODS

1. Plan

The procedure whereby the subject's own physician took on a large part of the actual work had, as already mentioned, unmistakable advantages. It was undoubtedly a disadvantage that this involved taking into consideration more dissimilar and to some extent more individual working methods than would have been the case if a small group of investigators had done the survey. In order to make the data as comparable as possible in spite of the large number of investigators, it was decided in the beginning to form a number of work-groups. These work-groups were to be limited in size so that each member would have a chance to get information, exchange ideas, and discuss experience. This was intended to provide a basis for achieving insofar as possible a uniform policy by which the investigators could all solve any uncertainties which might arise. In connection with the limited amount of time which the members of these work-groups would have available for such meetings, it seemed further desirable to supply all participants with the required information and instructions in written form as well.

2. Organization

Since experience with the large pilot work-group had shown that the membership per group should not be more than about 20 to permit fruitful general discussion and there were originally about 500 participants, 24 regional work-groups were formed. In composing them, the distribution of the physicians according to the Royal Netherlands Medical Association branches was used wherever possible so that members who belonged to the same branch or to a couple of neighbouring branches would usually be included in the same work-group. In consultation with several participating physicians who had also taken part in the pilot study or who were on the committees of their branch, choice was made of accessible meeting places and convenient times.

After these points had been settled, each physician received an invitation to attend the meeting of his group, a blank form and franked envelope being enclosed for reply. Together with this was sent a copy of the questionnaire and the drawing and story from the memory test, a review of all the questions, and an explanation of the examination form. This gave the group members a chance to become acquainted with the various papers related to the investigation and have ready any questions they might wish to ask. The physicians who did not reply to the invitation received a reminder in their mail a few days before the meeting. Those who for any reason did not attend always received as soon as possible a request to attend another meeting to be held in the same area. Travel costs were of course reimbursed.

3. The objectives and methods of the work-groups

It was the task of the work-groups to achieve as uniform as possible a method of working, as well as to help judge the value and any correlation in the collected data. In addition, the meetings were to provide an opportunity to discuss experience and to consider anything which could favourably affect the investigation as such. The first meeting of the 24 work-groups (in Leeuwarden, Groningen, Gieten, Zwolle, Hengelo, Zutphen, Arnhem, Nijmegen, Maastricht, Eindhoven, 's-Hertogenbosch, Bergen op Zoom, Utrecht, Amersfoort, Alkmaar, Haarlem, Leiden, Dordrecht, and two each in Amsterdam, Rotterdam, and The Hague) was of course largely given over to informing the future investigators. After a general introduction by the co-ordinator or advisor concerning the objectives and plan of the investigation, the various subdivisions of the questionnaire were taken up to give the members further information on the points on which there was still any doubt.

The second meeting was organized after most of the participating physicians had examined one or more subjects, so that they could discuss their initial experiences and any difficulties, both with each other and with the co-ordinator or advisor. The number of work-groups was reduced on the occasion of this second meeting by combination of Amsterdam and Rotterdam groups into one in each city.

A third series of meetings took place to discuss a few tentative results from the first thousand filled-out questionnaires which had come in in the meantime. Whereas minutes had been taken during only a few of the meetings of the first and second series (since it had not appeared necessary to do so at each meeting) it was, however, done throughout

the last series because according to the plan of the survey comments and suggestions pertaining to the processing of the data were to be given further attention. In most cases an assistant from the secretariat of the Organization for Health Research was available to take these minutes. The experience with attendance, which at more than 60% for the first series could be termed rather good but which fell to between 40 and 50% for the second series, led to the combining of a number of the work-groups. In this way the third series comprised meetings in The Hague, Amsterdam, Rotterdam, Leeuwarden, Groningen, 's-Hertogenbosch, Roermond, Hengelo, Deventer, Bergen-op-Zoom, Gieten, and Haarlem.

It was a difficult problem to adequately inform those members who seldom or never attended the meetings. They were always kept up-to-date as much as possible. Extremely detailed information concerning the questionnaire was sent then, including matters which came up during the meetings. Various members were sometimes informed by personal correspondence or by telephone, and on some occasions by visits. Practice showed that this method often, although by no means always, promoted the uniformity of the investigation.

C. DETERMINATION OF THE SAMPLE

It would have been ideal if it could have been so arranged that the investigators as well as the persons to be investigated satisfied the requirements of a statistically reliable sample. In practice, however, this was impossible with regard to the former because participation was on a voluntary basis. This undoubtedly led to a certain amount of selection of the investigators. A connection between this selection and the actual health of the aged subjects is, however, most unlikely. Since they assumed this work voluntarily, many of the doctors could be supposed to be among the most conscientious investigators, but should this supposition be accurate, it could only be counted to the advantage of the survey. The representativity of the "sample" of the investigators can also be in part determined by analyzing such factors as geographical distribution over the country, etc. For a few such calculations, see Part II.

Although little could be done to exert any influence on the composition of the group of investigators, it was possible to obtain a sample of the aged to be studied which adequately satisfied the statistical requirements. The simplest approach would obviously have been to ask the physicians themselves to make a random choice. Experience has shown, however, that it is very difficult to get a truly random sample, uninfluenced in any

way, when it is left to "chance," if the investigator himself is involved in the choice. In the case of the present investigation there would, for instance, have been the possibility that the physician might have picked only from among those older individuals whom he had treated at some time, since he would be more likely to have forgotten more of those whom he had rarely or never seen. This would mean a certain bias toward the pathological cases. It is also conceivable that there would unconsciously be a choice of the more healthy old people since it is to be expected that examination of them might be simpler and quicker than of persons with all kinds of complaints.

It was thus clear that the determination of the actual sample would have to be done not by the investigators themselves but by an institution or person quite independent of the investigators. This required that each participating physician know the name, address, and age of all persons of 65 or more in his practice, so that a statistically reliable sample could be made by drawing lots. This proved to be the source of a great many difficulties. Those physicians who kept a complete and up-to-date card system of their patients or of the health insurance patients registered with them did not, of course, have such difficulties. This group constituted roughly a third of all the participants. The majority, however, had to be assisted in collecting the necessary data. This help could be supplied by municipal authorities where a given doctor had his practice, or through the health insurance groups whose members he treated. If these sources were co-operative, the doctor could in the first place obtain a list of all the aged living in the municipality. On this basis he would then have, if he were not the only active local general practitioner, to make a list of his own patients, which would be quite possible in the smaller places.

In the larger municipalities, however, this approach would be impracticable because it would cost the doctor too much effort, for example, to find his own patients in a list of 10,000 names. In that case the administrative departments of the health insurance groups offered the only possible source of at least some of the information required. One of the disadvantages here was, however, that it provided no solution where the aged who were private patients were concerned. Since, however, many physicians usually keep at least some sort of record of this category of patients and since this group also probably formed only 15 to 20% of all the aged, it was decided that each physician who got his data from health insurance sources should himself attempt, for instance through his

financial records of the preceding years, to put together as complete as possible a list of the aged whom he treated privately.

The intention was now that each participant, with the help of his own data or those from municipal records or health insurance administrative departments, should make up a list of the men and women in the age groups 65 through 69 years, 70 through 74, 75 through 79, and 80 and over, and then send this list together with a rough statement of the size of the practice or of the part of the practice in which the aged were included, to the Statistics Department T.N.O. The request for the latter information was intended to give the Statistics Department an idea of the nature of the practice and in particular whether practices were involved which had a percentage of aged which agreed with the average found per physician or whether they diverged from this average.

On the basis of the eight figures supplied by each doctor, the Statistics Department T.N.O. determined by lot which patients were candidates for the survey. The investigator was notified by this Department which numbers had been chosen by their lot. Each number represented the name of an aged individual on the doctor's list or card system. When one of the indicated subjects could not be examined for some reason, the investigator was to take the number preceding the original subject's number (where this was 1, then the last of that group). If this subject was also unavailable, the next preceding person was to be taken.

Once chosen, a subject was to be examined if at all possible. Those who had died or no longer belonged to the doctor's practice, for example because they had moved away, were self-evidently eliminated. Where possible, however, the cause of death was asked for. Within reasonable limits as much persuasion as possible was to be used on those who were hesitant. In some cases the physician could drop some parts of the examination if necessary. If that was insufficient, then he was if at all possible to find out the reason for the refusal. It need hardly be said that the seriously ill were not to be disturbed by the examination, and in general it was to be dropped where even the smallest unfavourable effect might be anticipated. Where possible, the investigator was to wait in such cases till reasonable recovery had taken place or try on the basis of his notes from previous contact with the patient to fill out the questionnaire as far as possible. It was expressly intended that any deaf, blind, or demented persons should be included.

After an investigator had concluded his work, he was always asked whether the subject was the originally indicated subject or whether changes had been made and, if so, what the reasons for these had been.

If the physician had not examined 10 subjects, he was requested to supply information about whether the subjects who had been examined had been a chance choice and, if not, what criteria he had used in choosing them (geography, degree of bodily health or dementia or deafness, refusal of the subject, etc.) Also, where the distribution over the age groups was divergent after the results were in, further information was requested on this point.

It could thus be said that there were eight samples per doctor, since from each age group of men and women one or two persons were chosen by lot. The choice of the second person in a group was done in such a way that in the end eight approximately equally large sex and age groups would be obtained. Naturally this division does not agree with the age composition of the aged population. Since, however, it is generally known that with increasing age health usually deteriorates (which has been shown by several studies of the aged) and just this deteriorating health was one of the most important subjects of study in this investigation, this statistical determination of the sample was deliberately applied; by it, the oldest of the aged could have relatively the heaviest representation in the total sample.

The above indicates that an attempt was made to get as representative as possible a sample from the eight groups formed according to age and sex. It need hardly be said that this attempt required extensive work. There was voluminous correspondence with town clerk's offices and health insurance administration departments, in which the Organization for Health Research T.N.O. again described the nature and objectives of the investigation. It was most encouraging that in almost all cases the necessary information was forthcoming. It was, however, often necessary to send reminders of the request or to give specific information by letter or telephone. In a few cases there was a personal interview with the functionaries of a health insurance group at which a solution to certain difficulties which was satisfactory to both parties was found. In this way it was arranged, after consultation with the Statistics Department T.N.O., that in some cases the health insurance group itself made a partial sample by arbitrarily indicating some aged persons, the Organization for Health Research T.N.O. sometimes indicating for which age and sex groups and for how many aged persons this should be done. This last was necessary in connection with the estimate made by the physician himself of what part the patients insured by the relevant group formed in his total insurance practice. A similar method was applied by the authorities of a few small municipalities.

In almost every instance the institutions and authorities mentioned requested no reimbursement for any costs incurred. In only a very few cases was any financial support given or personnel supplied.

It often took a great deal of effort to get the diverse data from the participants. In a few cases it was even necessary as an emergency measure to leave the determination of the sample to the investigator himself, which was naturally accompanied by a request that it be made as objectively as possible.

CHAPTER III

THE QUESTIONNAIRE [10]

A. THE PLAN

The questionnaire was intended to provide the physician with the means to form an adequate picture of the state of the subject's health and a number of social and psychological factors related to it. The time required for the examination of a subject was to be kept within a reasonable limit. Paper work was to be held to a minimum. To fulfill these requirements the questionnaire was designed so that the examination could be split into two or three instalments and most of the answers indicated by checking one of several possible answers.

B. GENERAL COMPOSITION

As we have said, the emphasis of the study was to fall on the physical examination. In addition, a rather detailed history and questions of a social and psychological nature were intended to contribute to a certain rounding off of the picture.

Just as is common in an ordinary medical examination, the questionnaire was so divided that a number of questions of a social nature were followed by a section providing for a rather detailed history. The actual physical examination formed the middle part of the questionnaire, after which the psychological section, ending with a memory test, formed the last part. In this arrangement the examination was rather simple to perform. Moreover, the examination, and thus the questionnaire, fell into three rather well circumscribed parts, which promoted its performance in separate stages. For it was clear from the beginning that the examination could be done more satisfactorily in sections than as a whole. The latter approach was tiring for the subject – an old person! – as well as for the investigator who was also likely to have difficulty in finding the approximately three consecutive hours required to do a

[10] The complete text of the questionnaire is given in Appendix I.

complete examination. Experience showed that a division into two or three parts was actually necessary in most cases. It was of course not imperative to end with the psychological section in all instances; in some cases it was even better to begin with it. In connection with the somewhat confidential nature of some of the questions, however, this part could best serve as a conclusion.

As discussed earlier, an attempt was also made to enlarge the psychological information into a short biographical anamnesis. This was done as a result of the experience of Groen [11] who on the basis of a few observations in his clinic thought that a well-taken biographical anamnesis could contribute to a deeper insight into the relationship between the individual's circumstances and the symptoms of aging. For the reasons already given, however, this plan had to be dropped.

C. SUBDIVISIONS

1. Anamnesis

a. The family history. Although from the anthropogenetic as well as from other points of view a rather detailed family history seemed to be valuable, experience proved here, as it had in other similar investigations, that the family history would have to be held to the posing of only a few questions. It was therefore necessary, in connection with the state of the subject's memory, to keep not only to questions concerning near relatives, but also to touch on only a few general points about their health. Where the early draft of the questionnaire for this part of the history contained questions about the health and causes of death of all grandparents and children, the final version retained only those about the present or earlier health, age at death, and main cause of death of both parents and, where appropriate, spouse. And it remained to be seen what the value of these remaining points would be. With regard to children, inquiry was made only concerning the number of dead and living descendants. A simple classification was used for the main causes of death, of the type employed in the so-called Amsterdam investigation of the "healthy." Since this classification was also used in several other parts of the history, the reader is referred to the following section.

b. The history of the subject. An appreciable number of the questions on this point covered general factors of possible importance to the evaluation of the subject's state of health as a whole. Thus the history began

[11] Personal communication.

with the question "Do you feel healthy?", followed by questions on such facts as the date of the last medical treatment, the nature and reason for this treatment and for any regular consultation of a doctor, the reason for which a specialist was seen after the age of 65, or hospitalization after that age. The classification of the affections was simple and the same as that referred to in the preceding section and used in the Amsterdam survey of the "healthy." The Amsterdam investigation was of a number of persons (3091) between 40 and 65 years of age who were considered to be in good health. On the supposition that it could be useful to compare certain data from that and the present survey, it was decided to follow the Amsterdam classification (see also page 36).

A few questions were intended to provide some information concerning possible negative effects of bad housing, the use of alcoholic liquors, smoking, and residence in the tropics. Still other questions went into the type and nature of accidents after the age of 60, the results of x-ray or fluoroscopy, the use of medicaments and the kinds used, and any former and/or present exercise or sports. A large part of the history of course consisted of questions about specific former and present sickness and abnormalities. These questions were mostly arranged in order of organs or organ systems.

As part of the history there was further a series of questions pertaining to such important activities as cooking, shopping, handling of money, washing, dressing, and ascending and descending stairs. It was inquired whether the subject could perform these activities and if not, which kinds of complaints impeded doing them and who then performed the housekeeping activities. This group of questions was largely identical with a series of questions used in the Groningen study. Lastly, the subject was asked whether he had complaints which handicapped him but for which he had not consulted a doctor and, if this was the case, why he had not done so.

2. The physical examination

This part of the questionnaire greatly resembled the procedure used at an examination for an insurance policy. Using it, the doctor could follow the customary sequence. There were, however, some additions, such as more detailed inquiries into the use of dentures, eyeglasses, and hearing aids, and in general extra concentration on signs belonging to or which might be considered to belong to more advanced ages, such as chronic or non-chronic joint abnormalities, tumours, cataract, arcus senilis, changes in blood vessels, dyspnoe, prolapse, prostatic hyper-

trophy, kraurosis, pareses and paralyses of arm and/or leg muscles. Only when the subject had no objection whatsoever was rectal and/or vaginal examination done. Because of the obvious importance of being able to compare the subject's own judgement of his health with the doctor's opinion of it, the latter was requested to note the general impression made on him by the subject's physical condition. The investigator was also to indicate whether any serious or non-serious aberrations were found during the examination which had been previously unknown to him and if so, what they were. This section of course also included a number of measurements and simple laboratory analyses. Weight, height, chest circumference and sitting height were recorded. Note was also made of the distances at which a whisper could be heard with both ears and, if possible, the number of dioptries of any eyeglasses used by a subject. (These last were generally only intended to supplement previous questions.) Pulse rate, respiration rate, and blood pressure were of course also taken, and for the last of these the investigators were asked to repeat the measurement at the end of the examination. The laboratory analyses consisted of determining the haemoglobin content of the blood and the sedimentation rate of the red blood corpuscles, and of urinalysis for albumin, glucose, urobilin, and, if necessary, sediment.

At the end of this section the physician was requested to give a short description, based on the history and physical examination, of his findings, and if necessary to note any comments of members of the subject's household which might lead to a better evaluation of the health of the subject. In particular, the investigator's summarizing opinion was considered very important, since on the one hand this required him to re-appraise his observations and, on the other hand, it would at the later evaluation of the completed questionnaire contribute towards the forming of a more exact and better integrated picture than would be possible from the answers to the various individual questions alone.

3. The social and psychological data

Although in actual practice the taking of a biographical anamnesis encountered too many problems, an attempt was nevertheless made to collect a number of social and psychological data which might contribute towards a better understanding of the state of health observed. Here too, strict limitation was indicated, even more so than for the history and the physical examination. The questions pertaining to the social circumstances were therefore restricted to profession, size and source of income,

standard of living, religious affiliation, marital status, type of living accommodation rent, board or nursing costs, location of the dwelling place (rural or urban), and health insurance membership. The investigators had in most cases only to let the subjects indicate one of several replies. Although this simple classification undoubtedly has drawbacks, it offered the only possibility of keeping the whole survey within reasonable proportions. For occupation or profession there were nine possible categories indicated. This classification, which was arrived at after consultation with a sociologist, was shown by the statistical analysis to be nevertheless inadequate, so that a further reduction of the number of types was then required. For the size of income, the physicians asked only to which of three classes specified in the questionnaire the subject belonged. An attempt to obtain more exact information would perhaps have resulted in reducing the subjects' co-operativeness.

Concerning the mental state, attention was given to the way time was spent, the degree of adjustment to old age, to feelings about being old, the place of the old person in society, and to a memory test. Since here it did not seem proper to use the choice of one of several indicated answers, in relevant instances the answer as given by the subject was to be noted. The questions concerning how time was spent had to do with the reading of newspapers, magazines and books, listening to the radio, attending various sorts of performances, how Sundays were spent as well as vacations, holidays, and "free time," whether the individual was still busy with a profession or hobby, his contact with family, friends, and acquaintances, and feelings of boredom and loneliness. In the section concerned with adjustment, the physician attempted to find out a little more about how the subject reacted to circumstances arising from old age such as the death of the spouse, the childrens' leaving home, deterioration of health, and retirement. By means of a few questions, an attempt was also made to perceive the feelings harboured by the subject in relation to his advanced age, his idea of his place in society, and what expectations he had of the future. The memory test was the same as that used in the previously mentioned investigation in Groningen. The only difference was that each investigator used a few local street names in the story to be repeated, which made the whole more suitable to the subjects.

D. THE FILLING-IN AND CODING OF THE FORMS

Although the forms were designed in such a way as to avoid as much doubt as possible about the meaning of the questions, it was considered

useful on the basis of such factors as the experience in the Groningen survey and in the pilot study for the present investigation to supply information concerning those points which might lead to difficulties at the very beginning of the actual survey. This was done both orally, in the first series of participants' meetings, and with written instructions, the latter especially intended for those who had not been present at the meetings. At the following meetings various questions from the forms were also discussed, especially those for which either question or answer might seem to have two meanings. On the basis of these discussions and the experience gained from reviewing the first group of completed forms, two more lists were made up with further information or criteria. All participants received all these three information sheets. For the sake of brevity here, see for their contents Appendices III A, B, C, and D. Reading of these instructions can also contribute to clarifying certain parts of the questionnaire which for considerations of space could not be discussed in the preceding sections.

The actual filling in of the forms was to be done so that the investigator marked the most appropriate answer and circled the coding figure denoting it in the space provided on the form. This method, which had proved its worth in the Groningen investigation, reduced the work required for processing the forms appreciably. Where the answer could not be indicated in this way, it was to be written out as briefly as possible. All applicants were also requested in case of any doubt to note just the reply and not spend too much time on choosing the most exact printed answer. The double recording of the answer had the advantage of providing both the investigator and the co-ordinator, who was also responsible for processing the results, with a certain check. In practice, however, many physicians limited themselves to drawing a circle around the relevant figures. Without doubt this increased the chance of error in filling in the forms. This, however, probably did not – as indicated by the experience where comparison of two answers was possible – occur often.

The arrangement of the actual coding was made in close consultation with the Statistics Department T.N.O. for the statistical aspects and with the advisor for the medical aspects. By taking into account from the very beginning the recommendations of the Statistics Department, the later transfer of the data by this Department to punch cards was relatively easy.

For some data it was necessary to introduce supplementary coding.

The standards for this coding were set in consultation with the advisor, after having obtained an idea of the answers which occurred most frequently. To start with, a medical student and a temporary clerk were employed to do the supplementary coding according to specific instructions which can be found in Appendix II.

CHAPTER IV

THE PROGRESS OF THE SURVEY

A. IMPLEMENTATION OF THE SURVEY

Two points which inevitably required a great deal of thought during the entire period of the main survey concerned the sustaining of the physicians' interest and retaining a sufficient number of them to provide a statistically reliable number of forms. At times the progress of the survey indeed laboured under great difficulties, which made it necessary to continually encourage the physicians to do what they had agreed to do. The course of this phase of the investigation can best be indicated by the following short report.

The original objective was that each participant would have a chance to examine his 10 subjects before October 1956. This period subsequently proved to have been made too short, possibly due to lack of experience with a project of this type. As a result the proposed date had to be postponed twice, first until the beginning of 1957, later until September 1957. An important factor in this situation was that the whole investigation was carried out by the general practitioners on a voluntary and disinterested basis. It was therefore difficult to put more than mild pressure on them. The continually repeated exhortation was in the end, as will be seen, not without effect. Various participants later reported that the repeated prompting had indeed spurred them on. In a few cases, however, it had an adverse effect.

It required much effort during the first period to stimulate the health insurance groups and municipal authorities to the promised co-operation; the long wait for the indispensable data threatened to dissolve the interest of some of the participants. The physicians who had not yet sent their data for the sample to the Statistics Department T.N.O. were reminded several times where necessary. Thanks to this measure, the number of physicians who had received their sample numbers and could begin their work rose from about 150 in July 1955 to 250 in September 1955. At the end of 1955, of the total of ± 575 physicians who had registered

during the course of that year, ± 75 had withdrawn. Two thirds of the remaining 500 knew by then which subjects to examine. Of these, a few score investigators had already sent in all 10 or some of their filled-in forms.

As expected, little progress was made during the winter months of 1955-1956. An influenza epidemic of many weeks duration frequently kept most of the physicians busy till late in the evening, leaving little or no time for extra activities. This and the heavy load on their practice experienced by a number of participants from the summer of 1955 on, caused some of them to withdraw during these months. Those who reported that they could no longer co-operate were requested to reconsider whether they could participate at a later time. Since after their registration a number of physicians had never answered letters or invitations to meetings, it was difficult to determine how many had actually totally withdrawn. In March 1956 it was known, however, that at that time more than 330 participants had been informed by the Statistics Department T.N.O. concerning the sample.

After the winter an attempt was again made to stimulate interest. This was done in several ways: by scheduling a second series of meetings (this had already begun in February), by promoting contacts between the participants themselves, by encouragement given by the *Landelijke Huisartsen Vereniging* (National Association of General Practitioners), by requesting the help of the chairmen of the local general practitioners' Associations, or branches of the "*Maatschappij*" (Medical Association) (each chairman received in this connection a synopsis of what the members in his branch had done on behalf of the investigation), by keeping all participants abreast of what was going on, and by a third instalment of the material elucidating the questionnaire. In addition, in the spring of 1956 some 30 or 40 doctors at last received from a few large insurance companies the data necessary for the determination of the sample. The result of all this was that the number of forms sent in, which had been 175 at the end of March, had risen to 525 by the middle of 1956. In the meantime, the number of participants had dropped to 475.

As the summer of 1956 went on, it appeared that due to various causes such as a rather high incidence of poliomyelitis and lymphocytic meningitis or the population's fear of them, the pressure on general practitioners decreased little. This caused another set of participants to lose courage and withdraw.

Continual fresh attempts were made throughout the survey period to recover the co-operation of participants who had left the ranks, either on

a basis of a smaller load or postponement of the final date. A great many letters and telephone calls to participants who were slow in sending in their material for the sample or their questionnaires offered a personal visit from the co-ordinator to bring the required information or otherwise extend assistance. This was, however, practically never felt to be necessary, in almost all cases lack of time was the only obstructing factor.

To reduce the load of some physicians even further, the Organization for Health Research T.N.O. or the Statistics Department T.N.O. itself assumed the work of arranging the lists of names and birth dates for the sample determination from material supplied by the participants.

At the end of August 1956 another method of holding the interest in the investigation was tried. At that time the Organization for Health Research T.N.O. undertook to pay the costs of a temporary membership in the Netherlands Congress for Public Health Policy for each of the participants. This made it possible for them to attend and receive reports of the congress on old-age problems held in Scheveningen that October, without cost. Some 80 of the participating physicians accepted the invitation to attend this congress.

In the meantime, the number of physicians who could be assumed to still be taking part in the survey steadily dropped. It was therefore considered necessary to chance a few more attempts to increase this number. To this end, among other things, on the 20th of November, a letter signed by the co-ordinator and by the professor of Social Medicine at the Roman Catholic University in Nijmegen was sent to all those general practitioners in the southeast part of the country who were at the same time members of the Royal Netherlands Medical Association and who had up till then not registered as participants. This area was chosen because the number of collaborators there was proportionately the smallest. In addition, a number of physicians were included in the effort to stimulate inactive participants. This group comprised among others all the physicians who had sent in completed forms. An effort to stimulate interest in the investigation was also made by a number of Provincial public health medical inspectors in several provinces, a few Municipal Health Service directors or physicians, and the founders of the *Nederlands Huisartsen Genootschap* (Netherlands College of General Practitioners), almost all of whom were themselves active participants. A few lectures, some of which were given by participants, also drew attention to the project. And finally, from the middle of November 1956 on, telephone calls were made to all physicians whose progress was not known (this group included rather a large number of participants who

had already been contacted by telephone in September and October).

These many attempts to on the one hand convince participants to begin or complete the survey and on the other hand to hold the total number of participants at a reasonable level were not without effect. Where the number of returned, filled-out forms had reached 900 in the middle of September, by the end of 1956 it had become 1600. The number of physicians assumed to be still participating was at that time more than 470, including 35 new members from the southeastern part of the country.

Once again, in the winter months of 1956-1957, the physicians had very little time for the investigation. The effort to stimulate lagging members by the oral and written contact already described was continued in 1957. The written matter took such forms as a letter of encouragement attached to copies of the Proceedings of the Congress on Old-Age Problems. The third series of meetings provided among other things an opportunity for personal contacts and discussion. The College of General Practitioners wrote all of its members who were participating in the T.N.O. survey but who had as yet done little or nothing concrete. The Royal Netherlands Medical Association also made an effort to encourage those whose level of activity was rather low by publishing two "appeals" in the name of the Executive Board in *Medisch Contact* in April and June, by a request to the regional chairmen to personally approach lagging members, and by an individual letter to those who in June 1957 had still done little or none of their share of the investigative work.

In the meantime another series of tentative results was assembled from the first thousand completed forms, again primarily to stimulate interest. A report of this second series of data was sent out in June, accompanied by the urgent request to complete the survey.

The number of completed forms received which was 2100 at the end of March 1957, had risen to 2400 by the end of the following June. Since this number was not yet considered adequate, another very urgent letter was sent to all the lagging collaborators requesting that the investigation be accomplished before the beginning of September. At the beginning of August all those physicians who had not yet complied received a final urgent telephone appeal. Last of all, in September all those who had still not responded to any of these requests were expressly asked to send in as soon as possible all forms whether or not they had been filled in. The result was that at the end of that month more than 3000 completed forms had been received. This number, as has already been pointed out, was considered adequate by the Statistics Department T.N.O. The distri-

bution of these approximately 3000 aged individuals will be discussed in the second part of this report.

Since it was known that a number of physicians still had a few completed forms which they had not sent in, written and oral efforts to collect these were continued for some time. This raised somewhat the total number of usable forms, which especially as a result of the contribution of one physician who had examined 141 subjects reached the final figure of 3149.

Looking back at the laborious effort required to reach this point raises once again the question of whether it would not have been better to have arranged for the survey to be carried out by a special team set up for that purpose. Apart from the objection that this would have caused serious resistance on the part of a number of physicians and certainly on the part of a good many of the aged, the previously mentioned disadvantages with respect to a strange investigator would have remained in full strength. All in all, in the opinion of many physicians and of the co-ordinator, the method chosen was unquestionably preferable. That it was possible to use this method successfully is to be credited to the approximately 375 physicians who were willing to make such a great effort.

B. TENTATIVE DATA FROM 1000 FORMS

Twice a number of data were assembled from the first 1000 forms to come in. Both tabulations were done without machines, the second by a medical student, which necessitated limiting the work to a series of uncomplicated, or relatively uncomplicated, data. The intention was to get an idea of the frequencies of certain observations and thereby increase interest in the investigation. The first series was presented for discussion at the third round of meetings. The essential points which arose were consistently noted so that they could be used in subsequent processing and reporting. The second series of data was mailed to all participants with a request for comment. Very few physicians, however, responded to this.

C. PROCESSING THE DATA

Supplementary information

The filled-out forms were checked by the co-ordinator as they came in. In most cases not all the questions were answered. Some questions also proved to have been misleadingly explained so that the answers were

inadequate. In all these cases the forms were returned to the physicians with the request for the necessary additions to the questions indicated. On the basis of experience with a few hundred forms, a list of the most frequent omissions or improper replies was made so that each investigator could quickly locate what was requested of him. In practice, however, these lists were used rather little so that after some time the method was discarded and the relevant questions were indicated only on the form itself. Even after the investigator himself had made changes and added material, there were still sometimes points which were not attended to in spite of the request. The reasons for this were, among other things, that the subject concerned could no longer be visited, that the investigator had overlooked the indicated questions or forgotten to attend to them, or that he felt he had no time for this work. In these cases it was necessary to note the answer as "unknown" or to later answer the question as well as possible from the other information on the form. There were also rather frequent exchanges of letters with individual physicians to obtain further data on given points.

Forms which had very little or no data on the physical examination were always set aside; this was done also in the few cases where that part of the form was filled in but none of the rest of it.

Checks

The forms as they came in were thus first examined by the co-ordinator, then usually further filled in or corrected by the investigator, and then re-examined by the co-ordinator. In order, however, to prevent his overlooking certain incomplete points or misjudging certain replies, a medical student was employed to look through the forms another time. The co-ordinator then examined any changes made by the student and at the same time glanced again at the other parts of the form. Finally, the transfer of the data to punch cards again showed up a small number of inaccurate or incomplete codings and thus provided a last opportunity for correction.

Mechanical processing

All the data, most of which were coded by the investigators themselves or by the co-ordinator, were directly transferred at the Statistics Department T.N.O. from each form to four punch cards. Since this Department had already given its advice on the setting up and printing of the forms, certain technical data, for instance, had been added on the forms which

further simplified the punching. In May 1958 the punching was completed by the Statistics Department T.N.O.

After consultation with this Department and some of the members of the Advisory Committee, the Department started the simpler tabulations per sex per age group (65-69, 70-74, 75-79, 80-84, 85 and over). The counting of the combined data was then dealt with. For this purpose and because of the very extensive use of the punch cards, the data had repeatedly to be transferred separately or in combination to new punch cards. The choice of the combinations was determined after examination of the results from the simple counting in consultation with the Statistics Department T.N.O. and members of the Advisory Committee. The suggestions and comments of the participants at the meetings of the work-groups were here also taken into consideration.

In the meantime, the Statistics Department T.N.O. related many results by calculating the percentages. The correlation calculations, analyses of variance, and other necessary mechanical processing and other operations were then done. The most complicated of these could only be done after the Statistics Department had obtained use of a so-called Zebra (an electronic binomial calculating machine). A large part of the simpler significance calculations could be done by the co-ordinator himself.

Reporting

The internal reporting, which went into details, was done in the customary quarterly and annual reports of the Organization for Health Research T.N.O. Resumés of these reports were given in the general quarterly reports of the Organization for Health Research T.N.O. which are sent to all research workers connected with T.N.O., and in the reports which are published each year. There was also a regular report on the progress of the investigation [12] in those numbers of the monthly publication T.N.O.-Nieuws (T.N.O.-News) which once each year is devoted to the Organization for Health Research; and in 1958 a short article [13] also appeared there.

The final report was read by the doctor in charge of publications of the Organization for Health Research T.N.O. as well as by the former

[12] Zonneveld, R. J. van; Medisch onderzoek van bejaarden (Medical examination of aged people), T.N.O.-Nieuws, 1955, 10,443.
Zonneveld, R. J. van; Geneeskundig onderzoek van bejaarden, T.N.O.-Nieuws, 1956, 11,466.
Zonneveld, R. J. van; Geneeskundig onderzoek van bejaarden, T.N.O.-Nieuws, 1957, 12,486.

[13] Zonneveld, R. J. van; Onderzoek naar de gezondheid van bejaarden met inschakeling van huisartsen (Investigation into the health of the aged with participation of general practitioners), T.N.O.-Nieuws, 1958, 13,451-453.

advisor of the project, and discussed by the Advisory Committee. Before publication the most important results were submitted to the participants for discussion. At two meetings in June 1959 and through letters they had an opportunity to comment and criticize. After being approved by all those interested, the final text was translated into English.

Subsequent investigations

It is very evident that it would be most useful if, after a lapse of time, a follow-up study were to be made. This would to some degree satisfy the many who hold the justifiable opinion that repeated investigations over many years, the so-called longitudinal studies, will lead to a much better understanding of the changing health condition of the aging person than the so-called transversal (cross-sectional) study to which type the present investigation belongs. This opinion was also frequently heard in the work-group discussions. However, if such follow-up studies are made in the future, it will be necessary for each physician investigator or his successor to know which subjects were originally examined. In principle it would then be simplest if each physician were to have a list of his subjects. During the first series of meetings, however, it had already proved impossible for some physicians to compose such a list. It was therefore decided in consultation with the participants that each physician would, for the purposes of such subsequent studies, make such a list at the conclusion of his own part of the survey and that these lists would be preserved in a restricted file accessible only to the co-ordinating physician. Those physicians whose records did not permit identifying the individuals whom they had examined were sometimes still able to do so with the help of the forms, which were sent back to them for that purpose. A few participants objected to this central file; they were requested to carefully preserve their own lists themselves. The required information was in the end received from more than 90% of the physicians.[14]

Co-ordination with other investigations

a. Mention was made on page 24 of an attempt to relate the present work to some points in the form used for the Amsterdam study of the "healthy," especially with respect to the classification of diseases or of the groups of diseases which had affected the subject or certain members of his family

[14] In the meantime it has been decided to have such a follow-up study. In the summer of 1960, five years after the first persons were examined, the second round started.

during or before the study. After the completion of the report on the Amsterdam study [15] there proved to be no comparable data included with respect to these points, nor did this report offer any other points which could be connected with the present report. The reason for this is on the one hand the completely different approach and objectives of the Amsterdam investigation and on the other the fact that the group of persons investigated there was in various respects not representative of the entire population. The Amsterdam study concerned, firstly, healthy men and women who, secondly, had volunteered for the examination, who, thirdly, were city employees, and who, fourthly, lived in a large city. Similar data from the two studies are therefore not comparable.

b. The nutrition of the majority of the subjects examined by Dr. L. Burema of Nieuwe Schans was studied by a dietitian from the Ministry of Agriculture, Fishery, and Food Supply. At about the same time, this physician examined 141 of the 192 aged persons in the Nieuwe Schans part of his practice, using the T.N.O. form. He also made certain additional measurements on them pertaining to the thickness of the fat layer at various points on the body and did several other examinations. Some of the results of the dietary study have already been published.[16] The report of the combined findings of the two studies has not yet appeared. Concerning diet, it can for the sake of completeness also be reported that a pilot dietary study has been made by a dietitian from the Central Institute for Nutrition and Food Research T.N.O. of 57 aged subjects who were examined by their general practitioners at the time of the preparatory medical investigation.

c. All the residents of the Rotterdam Municipal Home for the Aged and the men in the equivalent institution in Amsterdam were included in gerontological investigations. A medical examination formed an essential part of the former study and the most important part of the latter study, and both adopted the T.N.O. questionnaire. These investigations are still in progress at the time of writing.

[15] Heide, R. M. van der; Resultaten van een geneeskundig onderzoek van 3091 mannen en vrouwen, 40-65 jaar oud. Proefschrift Amsterdam, 1959. (Results of a medical investigation of 3091 men and women, 40-65 years old. Thesis, Amsterdam 1959).

[16] Burema, L.; Een onderzoek naar de voeding van thuis wonende bejaarden in een plattelandsgemeente. Tijdschr. Soc. Geneeskunde, 1959, 9, 337-342.
(An investigation into the nutrition of aged persons living in their own homes in a rural community J. of Soc. Medicine).

PART II

RESULTS

INTRODUCTION

The following chapters contain a series of results calculated by machine, as well as a report of a number of statistical results based on those calculations. For practical reasons the sequence used in the questionnaire is retained, even though as a result data of a more anamnestic nature appear among the results of the physical examination. Results are not given for all the questions. This is the case where a question was only answered sporadically or when closer consideration seemed to indicate that the results were of only secondary importance in terms of the objectives of the study. It will be obvious that even the simple calculations had to be strictly limited. In the first stage only the answers to all separate questions (or groups of related questions) were totalled, in 5-year age groups (from 65 years through 84, the remainder forming a group of 85 and over) for each sex. The group of 85 and over was too small to permit any further division by age.

A number of calculations of combined data were then done. The choice of combinations was based on the view that these results might in the first place contribute to a better picture of the health of the aged or the factors which affect it, all in accordance with the objectives of the investigation. The results of these two kinds of computations which alone gave an enormous quantity of figures, again required a strict selection to make it possible to get a reasonably over-all picture.

It was in general decided not to make complicated significance calculations. Often there was so distinct an age or sex difference present that such calculations could be omitted. In most cases only a comparison between particular data for the sexes or the extreme age groups was made. Where it nevertheless seemed useful to investigate whether or not a difference was significant, a simple table was used in the large majority of cases. This table shows the double standard deviation, calculated according to the equation

$$2s = 2\sqrt{\frac{p(100-p)}{n}},$$

for a sample of a given size (n) and a given percentage (p), in which the relevant data for that size of the sample occurs. If two percentages are so far apart that the lowest percentage plus its double standard deviation is still smaller than the highest percentage minus its double standard deviation, then for this type of results in general the difference can be taken as significant. The threshold value P is then of the order of magnitude of 0.01 to 0.05, and lies closer to the first than to the second figure.

Only in those cases for which it is noted in the text that a given difference is or is not significant was this calculation made; in all other cases, therefore, it was not applied. It is pointed out with emphasis that the presence or absence of a significant difference does not in itself mean a great deal, and that drawing conclusions for practical purposes on this basis alone must be done with great care. That a difference is significant means only that it is not reasonable to ascribe this difference to chance. The concept of significance as such conveys no information at all concerning the size or the implications of a difference.

The number of observations plays an important part in the evaluation; if more observations are done the significance of smaller differences will be recognized. When, for instance, the difference between two or more small series of observations having to do with the frequency of incidence of a given phenomenon are just not significant, then the number of observations might not have been large enough to permit determination of the significance of a difference, and a significant difference might have been shown if the number of observations could have been increased. In spite of the absence of significant values, these results can nevertheless show a certain trend. Taken the other way around, when a very large series of observations shows significant differences, these can nevertheless have little importance in connection with the other data. It is therefore consistently necessary to consider the fact of the presence or absence of a significant difference in relation to the absolute number of observations and the frequency with which the phenomenon concerned appears.

With regard to the assigning of practical consequences to whether or not there are significant differences, it may moreover be noted that the point of view from which the datum is interpreted is of great importance. For example, in the case of a physician without a dispensary who takes care of individual patients, a statistically significant difference between men and women in the use of drugs is probably of little importance. For those who are responsible for providing the drugs, however, this datum is indeed important, and definitely so in the case of institutions which are

responsible for the financial provisions involved. Thus the result that a particular difference is or is not statistically significant will have very different applications for the persons (or institutions) who care for the individual (e.g. practicing physicians), who are concerned with the care of groups (i.e. public health doctors, etc.), or those responsible for providing the means for this care (economists). The same of course also holds true for the presence or absence of certain correlations.

CHAPTER I

GENERAL INFORMATION CONCERNING THE SURVEY

More than 3200 forms were sent in. Of these about 50 had to be discarded, primarily because too many data were missing. The 3149 forms suitable for further processing often contained a few unanswered questions. It is for this reason that most of the results are for a smaller number of persons than 3149. The percentages reported in all cases pertain to the number of persons for whom that datum is known. In cases where no answer to a particular question was obtained for an appreciable number of subjects, this number is shown separately in the text.

Table 1 shows how the physicians contributed to the final results.

Table 1. Distribution of the general practitioners, according to the number of subjects examined by each physician

Tabel 1. Verdeling van de artsen volgens de aantallen van de per arts onderzochte bejaarden.

Number of general practitioners Aantal huisartsen	Number of subjects examined by each physician Aantal bejaarden door dezelfde arts onderzocht	Number of usable questionnaires Aantal bruikbare formulieren
18	1	18
24	2	48
14	3	42
15	4	60
17	5	85
12	6	72
12	7	84
14	8	112
22	9	198
212	10	2120
6	11	66
4	12	48
1	15	15
2	20	40
1	141	141
Total Totaal 374		3149

Of the 374 participants, 226 complied with the request to examine 10 or more subjects. One physician examined 141 persons, or about 3/4 of the elderly individuals in a certain part of his practice. Since a few calculations indicated that a number of the results for these persons showed no important difference from those of the total survey (keeping in mind the difference in age composition), the 141 forms for these people were added to the others.

It is a justifiable assumption that the physicians who examined not 10 but some other number of subjects applied a certain selection of those they examined, e.g. in the sense that the elderly patients regularly treated by them or those living closest would have been taken first for examination. For this reason, almost all the 157 physicians to whom this applied were asked, in connection with the selectivity of the sample, whether (and why) they had applied this selection. Seven physicians answered in the affirmative; 7 others stated that there had been partial selection. In the case of 41 physicians it is not known whether they made a certain choice from among the 10 indicated subjects, but in all probability this occurred seldom. The remaining physicians applied no selection. Where selection did occur it did not seem to depend on the health of the indicated subjects. The indications are that the slight amount of selection can have had no important influence on the results of the investigation.

The forms received did not always apply to the subject originally indicated in the sampling. In a number of cases changes were unavoidable and due primarily to death, change of doctor (e.g. as a result of change of residence) and refusal to participate. Insofar as data were obtained on these points by later inquiry, they are conveyed in Table 2.

Table 2. Known modifications in the original sample, classified according to the principal reasons; by sex and age groups; absolute numbers

Tabel 2. Bekende wijzigingen in de oorspronkelijke steekproef, gerankschikt volgens de voornaamste redenen; per geslacht en leeftijdsgroep; absolute aantallen

Ages Leeftijd	Death Overlijden	Change of G.P. (Subject moved) Verandering van arts (Verhuizing)	Refusal Weigering	Other Overige redenen	Total Totaal
Men/Mannen					
65-69	2	2	5	3	12
70-74	3	4	6	5	18
75-79	14	5	8	5	32
80-84	13	5	6	4	28
85 +	4	1	2	–	7
age unknown leeftijd onbekend	–	1	3	–	4
Sub-total Sub-totaal	36	18	30	17	101
Women/Vrouwen					
65-69	3	5	13	3	24
70-74	8	2	13	3	26
75-79	10	4	11	3	28
80-84	8	7	11	6	32
85 +	3	1	1	–	5
age unknown leeftijd onbekend	2	–	12	–	14
Sub-total Sub-totaal	34	19	61	15	129
sex and age unknown gesl. en leeft. onbekend	3	6	1	3	13
Total Totaal	73	43	92	35	243

These (sometimes incomplete) data were provided by the majority of the physicians. It can be assumed, however, that for those who supplied no information about changes in the original sample, either no such changes had been made or not to a greater extent than those who had reported making them. Table 2 indicates that 38% of the changes which became known were caused by refusals, 30% by death of the subject before he could be examined, 18% by change of physician (e.g. through

change of residence, admission to a hospital or nursing home, etc.), and 14% for other causes. Only for the refusals is there a definite difference between the sexes to be found: women refused twice as often as men. The Groningen survey also experienced more refusals by women than men. It is almost self-evident that the number of changes due to death was highest for the older groups. The relatively large number of changes in the older groups due to changing physicians can be explained in terms of the more frequent necessity at that age for admission to an institution where the individual's own physician cannot continue his treatment. For the rest, the number of changes due to changing physicians was limited to ± 1½% of the subjects examined.

On the basis of the information supplied, it was to some extent possible to classify the cause of death of indicated subjects as follows: for 36 men: decompensation, cardiac insufficiency 4, myocardial infarct 5, apoplexy 4, cerebral or general atherosclerosis 8, carcinoma 2, diabetes 1, pneumonia 1, unreported 11; for 34 women the respective figures were 1, 4, 2, 7, 4, 0, 0, and 15; one woman died as a result of an accident. These figures, insofar as their small number permits comparison with the mortality figures for all aged, show rather little agreement with the latter; in particular the cancer mortality is low. The fact that the aged in institutions not cared for by their own physicians were not included in the sample may play a part here. A total of about 2½% of the original subjects thus fell out because of death. In The Netherlands about 55,000 people over 65 died annually around 1956, i.e. ± 6% of all the aged. The reported percentage, which indicates mortality in a period of more than 2 years and pertains to a sample which is older than the average for the actual population of the aged, is thus appreciably lower than that for the population at large. This can probably be ascribed largely to the selective effect already remarked on of excluding aged people no longer treated by their own general practitioners (patients in many types of institutions).

The reasons given by the subjects for refusing to participate in the study are shown schematically in Table 3.

Table 3. Reasons for refusing to become a subject; by sex; absolute numbers
Tabel 3. Redenen tot weigering van het onderzoek; per geslacht; absolute aantallen

	Did not see the use of it Men zag er het nut niet van in	Were not in sympathy with it Men voelde er niets voor	Fear, anxiety, prudery Angst, schaamte, preutsheid	Too tiring, too much excitement Te vermoeiend, te veel opwinding	Other reasons Overige redenen	No reason given Geen reden opgegeven	Total Totaal
Men/Mannen	4	8	8	2	5	3	30
Women Vrouwen	9	10	24	4	8	6	61
Sex unknown Gesl. onbek.						1	1
Total Totaal	13	18	32	6	13	10	92

Consideration of this Table indicates that especially the anxiety that something would be discovered, or general fear of the investigation, shame, and prudishness, played a large part in refusal; this applied especially to the women. Other rather important reasons were not seeing the point of making such an investigation, and general unwillingness.

Although the actual number of refusers was probably somewhat larger (a few doctors reported that they had given up participating in the study after having from the very beginning failed to interest subjects), the number of "known" refusers was limited to 3%, which can be called encouragingly small. In Groningen only 1.2% refused, but that study did not include a physical examination.

The percentage of changes in subject for other reasons than those mentioned above was ± 1%, so that there were about 8% in total for the original sample.

Table 4 shows the composition of the sample.

The condition that there be approximately equal distribution as to age and sex in the 8 groups was therefore not fulfilled to the extent that irrespective of the rather slight differences between the groups of men and women, the oldest group was proportionately too large and the youngest group too small. This shift from "young" to "old" can largely be explained by the fact that the investigation took more than two years. In

Table 4. Size of the samples

Tabel 4. Omvang der steekproeven

Ages Leeftijd	65-69	70-74	75-79	80-84	85 +	Total Totaal
Men Mannen	351	407	411	296	138	1603
				434		
Women Vrouwen	348	393	382	271	152	1546
				423		
Total Totaal	699	800	793	567	290	3149
				857		

the period which elapsed between the determination of the sample and the actual survey, a number of the subjects moved into the next higher age group. Thus whereas the oldest group could increase continuously, the youngest could only decrease.

Representativity

On the basis of a number of calculations an attempt was made to find out whether the investigated individuals were more or less representative of the entire group of aged in The Netherlands. For each age group and sex, the distribution by provinces, the socio-economic standing, the religious affiliation, and the marital status in the sample and in the total population (the latter obtained from the Central Bureau of Statistics) were compared. As was to be expected, the agreement of the distribution by provinces was not so good, at least for the groups of 65-69 and 70-74 years: the province of Groningen contributed a proportionately far too large number of subjects because one physician there had examined 141 people. If this province was not included, then only in the youngest group of women was there any appreciable difference from the total population; although the differences in the other groups were noticeable, they had become much smaller. Aside from the deviation of the Groningen figures, it can in general be said that in proportion, the numbers of aged surveyed in the provinces of Gelderland and North Brabant in particular were on the high side and those in North Holland and, to a lesser extent, in Limburg were on the low side.

Comparison of socio-economic standing was on the basis of two groups: aged with an income of less than *f* 3000 per year (which is

± £ 285 or $ 790) and those with an income above this amount (the figures obtained from the Central Bureau of Statistics were from the 1956 general housing census). Taken as a whole, on this point the sample was a rather good reflection of the entire population. Only in the sample group of men of 75 and over were there proportionately distinctly fewer people with a "high" income (over *f* 3000 a year) than might have been expected, and in the men's 65-69 year age group there were clearly more than the expected number.

The distribution by religious affiliation in the sample and in the total population agreed reasonably well, with the exception of those in the women's 65-69 year group. In the sample, however, and especially in the younger groups, the number of Catholic aged was proportionately on the low side and the number of Dutch Reformed on the high side, which is probably to a great extent attributable to the same 141 subjects examined by one doctor, who came from a practice which included almost no Catholics. The religious affiliations of the participating physicians may also have played a certain part.

The distribution by marital status in the sample groups in general agreed well with those in the corresponding groups in the total population. The number of unmarried was relatively somewhat low in the sample and the number of married somewhat high.

Summarizing, it can be said that the sample in general did indeed contain a reasonable cross-section of the aged in the population for the period around 1955-1956. The general validity of the data is limited only by the fact that the aged in institutions, no longer treated by their own general practitioners, were not included in the survey. The percentage of aged which according to the Central Bureau of Statistics data lived in (non-profit) homes and institutions in 1956 comprised about 6% of all aged persons of 65 and over. Some of these, however, were undoubtedly still treated by their own doctors, as the investigation also indicated. For the sake of completeness, it should also be said that old people are sometimes admitted to mental institutions and treated there by staff members although they remain on the lists of their own physicians. It may thus safely be assumed that at least 95% of all the aged belonged to the total collective group from which the sample was chosen.

Concerning the period of the survey, it can be said that according to the reports of the physicians in the successive months beginning with January, 163, 110, 104, 163, 262, 310, 356, 544, 358, 276, 285, and 199 persons were examined (there was no exact data for 19 persons). This indicates that for what are obvious reasons the investigation was carried

out mostly in the summer. This implies the possibility that the frequency of certain affections or symptoms belonging to cold-weather seasons is somewhat on the low side. This must be kept in mind in evaluating relevant data. This point will be referred to again briefly in connection with the physician's impression of the subject's health (see page 193).

N.B.: In evaluating the results it must be continually kept in mind that the age composition of the sample does not agree with that of the same group in the actual population since in the sample an attempt was made to have approximately equal age groups. The total percentages for men, for women, and for both sexes together thus apply only to the frequency in the sample. It is for this reason that as an aid to further orientation, figures are given in the text for the lowest and highest frequency of a given factor in the various sub-groups. When the percentages for a given datum in the successive age groups consistently show little mutual difference it can be assumed that in the total aged population such percentages will in all probability also be found.

The percentages in each separate age group in the sample of course hold for the whole age group concerned, within the previously noted limitations.

CHAPTER II

SOCIAL DATA

INTRODUCTION

Before reporting on this very varied and extensive data, it will be useful to consider briefly the sort of people to whom these data apply and in particular the difference in background between the oldest and youngest age groups. Expressed in "time," this difference represents approximately a generation. The men and women comprising the oldest group (85 and over) were already old (at least 70) during the second World War; at the time of the first World War they were middle aged (45 or more). This was a generation born in or before 1870, and was therefore formed in the 19th century. In contrast, the men and women who made up the youngest group at the time of the survey (65-70 years) were middle aged during the last war (between 50 and 60) and young adults (25-35) during the first one. They were born between 1885 and 1890, and were formed in the transition period between the 19th and 20th centuries. Many of the resulting differences can be clearly distinguished when the two groups are compared.

OCCUPATION

As Table I [17] indicates, 46% (42-53%) of the men and 41% (38-43%) of the women or their husbands were classified by the investigators as labourers (including transportation workers) and 34% (30-35%) and 28% (25-29%) as belonging to the management group (including farmers). The percentage of the first category increases for both men and women in the older age groups (although the difference between the very youngest and oldest groups is not significant), but the percentage of the category of male non-agrarian management (which includes self-employed) drops steadily in the successive groups. The women's higher percentage in the personnel category employed in hotel, café, and restaurant business and household personnel requires no further discussion. No

[17] Tables with Roman numerals will be found at the back of the book.

Table 5. Present socio-economic standing; by sex and age groups; percentages

Tabel 5. Huidige welvaartsklasse; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Men/Mannen					Women/Vrouwen				
	Income ⩽ Old Age Pensions Emergency Act Inkomen ⩽ N.O.V. uitkering	Old Age Pensions Emergency Act < income < appr. £ 290,– or appr. $ 790 annually Uitkering vlg. N.O.V. < inkomen < f 3.000,- per jaar	Income > appr. £ 290,– or appr. $ 790 annually Inkomen > f 3.000,- per jaar	Total Totaal %	Total Totaal abs.	Income ⩽ Old Age Pensions Emergency Act Inkomen ⩽ N.O.V. uitkering	Old Age Pensions Emergency Act < income < appr. £ 290,– or appr. $ 790 annually Uitkering vlg. N.O.V. < inkomen < f 3.000,- per jaar	Income > appr. £ 290,– or appr. $ 790 annually Inkomen > f 3.000,- per jaar	Total Totaal %	Total Totaal abs.
65-69	12.8	46.2	41.0	100	351	19.7	53.4	26.9	100	346
70-74	21.2	53.4	25.4	100	406	26.0	53.8	20.2	100	392
75-79	25.5	54.8	19.7	100	411	28.0	57.8	14.2	100	379
80-84	37.6	51.2	11.2	100	295	39.0	49.8	11.2	100	267
85 +	32.8	49.0	18.2	100	137	42.7	44.0	13.3	100	150
Total Totaal	24.5	51.4	24.1	100	1600	28.9	53.1	18.0	100	1534

information about occupation was recorded for 116 women (8% of all the women). The relative value of the data is discussed on page 26.
Table 5 shows a very clear-cut shift in the successive age groups: the older the group the lower the socio-economic circumstances. In each age group, about half of the subjects had an income lying between the amount provided by the Old Age Pensions Emergency Act and *f* 3000. As was to be expected, women's incomes were lower than men's. Significantly more men than women had an income of over *f* 3000 per year.

COMPARISON OF PRESENT ECONOMIC LEVEL WITH THAT AT THE AGE OF 60

Only about 1/4 (24-34%) of the men and about 1/3 (32-40%) of the women thought that their socio-economic circumstances had remained more or less the same (see Table 6). As could be expected, the economic level of many more of the aged had dropped rather than risen since their 60th year (percentages for men 53 and 18, for women 43 and 22). The percentage of women who thought themselves financially better off at the time of the survey than they had been at 60 or who could find no difference was thus slightly higher than that for men. The greater frequency of widowhood may have played a part here.

In general there were no distinct differences between the age groups. Among the oldest men and women, however, relatively more thought that their economic level had risen since their 60th year than did the youngest. In terms of the low level of wages in the past and the increase in the originally very low old age provisions, this judgement will have been more or less correct in many cases, although the diminishing ability to judge certain situations at more advanced ages must also be taken into account. These data once again show on how low an economic level a great many of the aged are and probably always have been.

SOURCES OF INCOME

In order to avoid overcomplication of the Tables, only a number of frequently mentioned sources of income for each sex are given separately or combined. Table II indicates that 825 men (± 51%) received the payments prescribed by the Old Age Pensions Emergency Act; for 198 of these 825 men (= ± 12% of *all* the men) this was the only source of income. For women these figures are 886 and ± 57% and 222 and ± 14%.

Individuals living solely on pensions, voluntary old age insurance (Law of 1919) or disability pensions or a combination of these sources

Table 6. Present economic level compared with that at the age of 60; by sex and age groups; percentages

Tafel 6. Welvaartsniveau thans, vergeleken met dat op 60-jarige leeftijd; per geslacht en leeftijdsgroep; percentages

Ages / Leeftijd	No difference / Geen verschil	Now lower than formerly / Thans lager dan vroeger	Now much lower than formerly / Thans veel lager dan vroeger	Now higher than formerly / Thans hoger dan vroeger	Now much higher than formerly / Thans veel hoger dan vroeger	Total / Totaal %	Total / Totaal abs.
Men/Mannen							
65-69	33.9	36.2	16.5	12.5	0.9	100	351
70-74	27.9	37.3	16.4	15.9	2.5	100	402
75-79	23.5	37.4	17.6	18.6	2.9	100	408
80-84	28.5	36.1	16.5	17.5	1.4	100	291
85 +	28.1	40.8	10.4	16.3	4.4	100	135
Total / Totaal	28.2	37.1	16.3	16.2	2.2	100	1587
Women/Vrouwen							
65-69	40.3	27.8	14.0	16.4	1.5	100	342
70-74	34.0	34.0	11.0	19.2	1.8	100	391
75-79	31.6	32.3	13.0	21.2	1.9	100	378
80-84	34.4	29.4	11.7	23.4	1.1	100	265
85 +	33.1	23.4	15.9	26.9	0.7	100	145
Total / Totaal	34.8	30.4	12.8	20.5	1.5	100	1521

numbered 186 men (± 12%) and 155 women (± 10%); solely supported by children or charitable institutions or both were 5 men and 8 women; and solely from incomes from property, honoraria, salaries, wages, and "other sources of income" or a combination thereof were 252 men (± 16%) and 187 women (± 12%).

The answers to this question, which was intended to obtain a general impression – and only that – of sources of income, indicate that the large majority of the subjects had incomes from more than one source.

RELIGIOUS AFFILIATION

As Table III shows, 29% of the men and 28% of the women stated that they were Catholic and more than 60% of the men and more than 65%

of the women that they were Protestant (for convenience sake, these latter percentages include a small number of people adhering to non-Christian religions); 11% of the men and 7% of the women reported that they were not affiliated with any church. The 1947 population census showed that 17% of the population reported themselves unaffiliated. Thus there was less church affiliation among the young than among the old subjects. In general, the men were much less church going than the women. On this point no explicit age effect can be found, although the percentage of unaffiliated drops noticeably with increasing age (for the men the difference in percentage for the youngest and oldest groups is significant).

MARITAL STATUS

Table 7. Marital state; by sex and age groups; percentages

Tabel 7. Burgerlijke staat; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Never married Nooit gehuwd geweest	Married at present, first marriage Thans gehuwd, eerste huwelijk	Married at present, subsequent marriage Thans gehuwd, volgend huwelijk	Marriage dissolved (death, divorce) for Huwelijksontbinding (overl., scheiding) sinds				Total Totaal	
				0-4 years 0-4 jaar	5-9 years 5-9 jaar	10-19 years 10-19 jaar	20 years or more 20 jaar of langer	%	abs.
Men Mannen									
65-69	5.1	72.9	10.0	4.6	3.7	2.3	1.4	100	351
70-74	6.4	60.0	12.5	7.1	3.7	6.6	3.7	100	407
75-79	7.1	47.6	9.5	11.4	10.0	8.3	6.1	100	411
80-84	6.1	31.5	12.5	12.5	11.1	13.5	12.8	100	296
85 +	4.3	24.7	3.6	13.8	12.3	23.2	18.1	100	138
Total Totaal	6.1	51.4	10.4	9.2	7.4	8.8	6.7	100	1603
Women Vrouwen									
65-69	7.8	56.6	5.2	8.6	8.3	8.3	5.2	100	348
70-74	11.7	42.4	3.1	12.2	7.7	14.5	8.4	100	392
75-79	10.2	33.3	2.6	12.6	8.4	18.8	14.1	100	382
80-84	11.1	20.7	1.5	12.2	13.3	23.5	17.7	100	271
85 +	11.2	10.5	3.3	5.9	10.5	20.4	38.2	100	152
Total Totaal	10.3	36.2	3.2	10.9	9.3	16.4	13.7	100	1545

Consideration of Table 7 shows that the number of persons who had never been married is relatively the same in the successive age groups (for men 4 to 7%, for women 10-12%). Only in the group of women between 65 and 70 is the percentage slightly smaller than in the other groups of women (± 8%). Significantly more women than men had remained unmarried. The number of first marriages in which both partners were still living understandably drops sharply with increasing age. The fact that more women outlive their husbands than vice versa, in other words that there are more widows than widowers, explains the finding that more men than women were still married.

The number of second, third, etc. marriages of which both partners were still alive, however, remains relatively as large for the men of the successive age groups (with the exception of the oldest group), while for the women a consistent drop in percentage can be seen (again with the exception of the oldest group; for both sexes, however, the absolute number is very small, so that these last percentages do not say much). The explanation, which also applies to the rather high percentages among the men, is obvious: men remarry more than women, and their later marriages are often to women appreciably younger than themselves. The percentages of those whose spouse had been dead for some period of time of course continually increase in the older age groups; only the oldest women show deviating percentages, due to the fact that the percentage of those who had been widows for 20 or more years was strikingly high.

MANNER OF LIVING

Table 8 (page 58) gives some idea of how the aged live. Since there were difficulties in a number of cases with classification according to whether the housekeeping was done separately or shared, these are combined in the Table.[18] The Table indicates that very many women, especially in the youngest groups, live independent of any (or with only a little) household help. Many married women belonged to this category: the help supplied by their husbands was apparently seldom considered to amount to much (the converse was noted only 10 times). This is in contrast to the help given the men by the women, which was often considered by the former essential to maintaining an independent household. With in-

[18] The original table showed that in the groups up to 75 years, the percentage of those living with children with separate housekeeping was larger than for shared housekeeping; in the 75-79 group the latter arrangement predominated slightly and in the 85 and over group the former was several times greater than the latter. The number of those living either way with friends or family and strangers were too small for useful comparison.

Table 8. Manner of living; by sex and age groups; percentages

Tabel 8. Wijze van wonen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Living independently Zelfstandig wonend			Living together with Inwonend bij of samenwonend met			In a home for the aged (residential home) In pension	In a nursing home In verpleegtehuis	Principal care by spouse Verzorging hoofdzakelijk door echtgeno(o)t(e)	Total Totaal	
	Without help Zonder hulp	With paid help Met betaalde hulp	With unpaid help Met onbetaalde hulp	Children Kinderen	Friends or family Vrienden of familie	Strangers Vreemden				%	abs.
Men Mannen											
65-69	8.3	8.3	4.3	15.1	2.2	1.4	1.7	1.1	57.6	100	351
70-74	10.1	9.1	5.4	15.0	3.2	2.0	3.2	2.7	49.3	100	407
75-79	9.0	8.8	5.1	27.3	4.1	2.9	5.1	3.6	34.1	100	411
80-84	9.1	7.1	6.4	33.8	5.0	3.4	4.1	7.4	23.7	100	296
85 +	4.3	7.2	9.4	46.6	4.3	3.6	5.8	6.5	12.3	100	138
Total Totaal	8.7	8.3	5.6	24.3	3.7	2.5	3.7	3.8	39.4	100	1603
Women Vrouwen											
65-69	61.5	6.3	5.5	18.4	4.0	2.0	1.4	0.6	0.3	100	348
70-74	45.3	7.6	7.1	23.7	6.1	3.3	4.3	1.8	0.8	100	393
75-79	36.0	8.1	9.2	28.6	5.0	2.6	6.0	3.7	0.8	100	382
80-84	21.0	7.4	8.9	36.5	5.5	3.3	7.4	9.6	0.4	100	271
85 +	13.9	9.2	7.2	41.5	8.5	1.3	6.6	10.5	1.3	100	152
Total Totaal	39.2	7.6	7.6	27.7	5.5	2.7	4.9	4.2	0.6	100	1546

creasing age the percentage naturally fell, from 73 to 37 in fact, because with increasing age consistently fewer women were actually in a condition to do the housekeeping.

The percentages drop appreciably for both the women living independently "without help" and the men living independently with their wives, in the successive age groups (for the women a drop from 62 to 14%, for the men from 58 to 12%). Six to 9% had paid help and 4 to 9 % unpaid. The percentage living with children with either shared or separate households naturally increased rapidly with increasing age: for men from 15 to 47%, for women from 18 to 42%. Living with friends or family was reported by 2-5% of the men and 4-9% of the women. Living with strangers with either shared or separate households was rare: 1-4% of the subjects did so. Two to 6% of the men and 1 to 7% of the women lived "en pension." One to 7% of the men and 0.6 to 11% of the women are in nursing homes. Thus more than 8% of the subjects lived in these two sorts of "institutions." The possibly somewhat high percentage of people in nursing homes is probably attributable to the preponderance of the older groups (whose percentage of those admitted to such homes is proportionately high) in this survey and the still confused classification of the various sorts of institutions for the aged in The Netherlands. So, for instance, the so-called rest homes might frequently be included in the nursing home category while some of them in fact resemble more a residential home. Only one subject was reported in hospital at the time of the investigation; this figure is undoubtedly misleading: the investigating physicians had postponed the examination until hospital patients had returned home. (In addition, there were also old people in hospitals who were no longer part of the practice of a general practitioner.) In this sense the figures given here are probably not entirely representative.

COSTS OF RENT, RESIDENTIAL HOMES, OR NURSING HOMES

Table IV gives an idea of the amounts which the aged subjects paid at the time of the study for housing and nursing or other care. (No data on this point were received from 5% of the men and 6% of the women.) In cases where the subject lived with someone else with either a shared or separate household, rental cost is taken as the estimated rental value of the space occupied, and as board costs the amount which was contributed by the aged to the combined living costs. About 1/4 (21-29%) of the

men and almost 1/3 (30-33%) of the women in the sample paid less than *f* 5.00 per week for rent at the time of the study. For a large part of the group studied (more than 1/3), especially in the younger groups, a rent of between *f* 5.00 and *f* 10.00 was customary. About 2½% (0.3-6%) of those who answered the question about these costs paid amounts for room and board of more than *f* 125 a month and about 2% (0.9-5%) nursing home rates of more than *f* 125 a month.

CHARACTER OF THE PLACE OF RESIDENCE

Here an arbitrary classification was used:
"country": municipalities with less than 20,000 inhabitants,
"urbanized country": municipalities with 20,000 to 50,000 inhabitants,
"larger cities": municipalities with more than 50,000 inhabitants.
An important criterion for this classification was the character of the local life, in other words, whether it was clearly "city" life or essentially "country" living, or a transition form between the two. The data on this point showed only very small differences as to age and sex. More than 55% of the subjects lived in the country, more than 10% in so-called urbanized country areas, and the rest, almost 1/3, lived in larger cities.

HEALTH INSURANCE MEMBERSHIP

Table V gives the partially combined results concerning this point. The percentage of women subjects, more than 14 (11-17%), who had never held such insurance was smaller than that of the men, almost 19 (15-22%). For the latter this percentage gradually dropped a little, except for the oldest group. During the two years preceding the survey few had joined such groups. It also appeared that in all the age groups except the oldest about 1/3 (25-36%) of those studied had been members for more than 35 years. About 80 % of those questioned were, therefore, members of a health insurance group. This percentage agrees well with that for the total population.

CHAPTER III

ANAMNESTIC DATA

A. FAMILY ANAMNESIS

1. Parents

Health and cause of death. In agreement with expectation, the replies concerning the parents' health and cause of death were usually rather vague and uninformative, and therefore did not seem to justify statistical evaluation. For the sake of completeness, it can be added that, also according to expectation, only in very exceptional cases were either of the parents of a subject still alive at the time of the investigation.

Parents' age at death. Since it was in most cases possible to record the age at which the fathers and mothers of the subjects had died, it seemed worthwhile in this study too to find out whether the parents of subjects of 80 or more had more often reached the age of 80 than the parents of the youngest group, in relation to the possibility of genetic inheritance of longevity. In contrast to a previous study of a similar type (Van Zonneveld and Polman 1955 [19]), no positive evidence could be found. Comparison of the age at death of the parents of the men and women of 65-69 and of 80 and over, both separately and combined, gave no significant differences between the frequency percentages. Thus the parents of the men in the successive age groups had died at or over the age of 80 in 24%, 17%, 16%, 13% and 20% of the cases; for women these percentages were 14, 15, 15, 16 and 21 respectively.[20] The age of 80 had thus been reached by slightly more of the parents of the oldest women than those of the younger women.

Since the literature indicates that for other investigations this hereditary factor is to some extent demonstrated, the present results may be a case

[19] Zonneveld, R. J. van & A. Polman; *Levensduur en erfelijkheid* (Lifespan and heredity); Tijdschr. Soc. Geneeskunde (J. of Soc. Med.), 1955, **33**, 185-187.

[20] These percentages in the Groningen study in the *four* successive age groups for men were 31, 30, 34 and 35 and for the women 30, 32, 33 and 37; they were thus also clearly higher than for the nation-wide study.

of statistical coincidence, but it is important to keep in mind that especially in the last few decades living conditions have appreciably improved. The aged also profit from this improvement in terms of their better health and longer lifespan. The phenotype of the present aged individual therefore differs from that of the aged of the preceding generation with respect to lifespan.

2. Spouse

Health. Of the 1463 men who were married (or had been) and who had answered this question, 932 or 64% said that their wives enjoyed good health or, if the wife was already dead, that her health had in general been good: 455 or 31% said that the health was or had been not so good, and the remaining 5% that it was or had been bad. For 1316 women these percentages were 71, 25, and 4 respectively. The men, therefore, in (significantly) fewer cases than the women considered their spouse's health good (see also section on subjective health, page 64). The youngest age groups of both sexes made the most optimistic judgements. No clear-cut difference, however, could be seen between the successive groups on this point, but there was a rise with age in the percentage of those who found the health of their spouse bad.

Primary cause of death of spouse. Table VI collects a few of the most important data on this point. As was to be expected, by far the most frequent primary causes of death, in agreement with the national data, were cardio-vascular and renal diseases, followed by malign neoplasms, brain diseases and mental diseases, and apoplexy. The group of respiratory and pulmonary diseases were fourth in the detailed Table.

3. Children

Table 9 shows what percentage of the subjects in each sex and age group had 0; 1, 2, or 3; 4, 5, or 6; and 7 or more living children. Consideration of these percentages and of the average number of children which each age group had, shows that the older groups (in spite of the higher infant death rate at that time) averaged somewhat larger numbers of children than the younger, a fact which is already known. The average number of children which these subjects had was about 4. This is a rather high figure. It indicates that at the time of the investigation many of these aged people could receive help or support from their children in one form

Table 9. Number of children still alive; by sex and age groups; percentages and mean numbers

Tabel 9. Aantal in leven zijnde kinderen; per geslacht en leeftijdsgroep; percentages en gemiddelde aantallen

Ages Leeftijd	Number of children/Aantal kinderen					Total number of aged people married or having been married Totaal aantal gehuwde of gehuwd geweest zijnde bejaarden		Mean number of children Gemiddeld aantal kinderen
	0	1	2 or 3	4,5 or 6	7 or more of meer	%	abs.	
Men Mannen								
65-69	1.7	16.0	38.6	28.0	15.7	100	300	3.88
70-74	2.0	15.5	35.6	29.9	17.0	100	348	3.93
75-79	2.3	15.2	35.2	30.7	16.6	100	349	3.88
80-84	1.9	12.3	29.5	39.1	17.2	100	261	4.21
85 +	–	11.5	36.1	30.3	22.1	100	122	4.29
Women Vrouwen								
65-69	1.0	14.9	36.7	30.4	17.0	100	289	4.04
70-74	2.6	12.1	37.1	30.5	17.7	100	305	3.92
75-79	1.4	11.8	40.5	29.4	16.9	100	296	3.92
80-84	1.9	14.2	34.0	28.7	21.2	100	212	4.14
85 +	3.4	15.5	27.6	38.8	14.7	100	116	4.13

or another. In view of the continually declining birth rate, it is to be expected that the aged in the future – in about twenty years, for instance – will be able to depend much less on these forms of help. This implies that such support, to the extent that it will be required under the conditions which will then obtain, will have to be given by other sources. (If the present rise in prosperity continues, there will by contrast be more persons who are able to support their parents than there are now.) As a curiosity, it can be mentioned that 3 of the men had 14, 15, and 16 children still living.

Of the men who had or had had children, for the successive age groups 38%, 50%, 58%, 63%, and 68% had lost one or more children; for the women these percentages were 45, 57, 58, 64, and 77. The women generally married earlier and therefore usually had children earlier than the men. At the same very advanced age, therefore, the women had had

more chance to lose one or more children. The majority of the subjects had thus in the course of the years lost one or more children. The death-rate among children at the beginning of the 20th century in The Netherlands was still rather high, and is undoubtedly responsible for this circumstance. The older aged also had had more chance of death of children because of the greater length of time involved.

B. PERSONAL ANAMNESIS

Subjective evaluation of health

Table 10. Subjective evaluation of health by the examinees; by sex and age groups; percentages

Tabel 10. Persoonlijke gezondheidsgevoelens van de onderzochten; per geslacht en leeftijdsgroep; percentages

Age Leeftijd	Men/Mannen Evaluation/Kwalificatie					Women/Vrouwen Evaluation/Kwalificatie				
	Good Goed	Not so good Matig	Bad Slecht	Total/Totaal %	Total/Totaal abs.	Good Goed	Not so good Matig	Bad Slecht	Total/Totaal %	Total/Totaal abs.
65-69	79.8	17.1	3.1	100	351	68.1	29.9	2.0	100	348
70-74	81.8	16.2	2.0	100	407	61.5	35.7	2.8	100	392
75-79	74.4	24.4	1.2	100	410	59.2	36.6	4.2	100	382
80-84	74.9	22.0	3.1	100	295	68.1	26.7	5.2	100	270
85 +	75.9	21.2	2.9	100	137	66.2	29.1	4.7	100	148
Total Totaal	77.7	20.0	2.3	100	1600	64.0	32.4	3.6	100	1540

To an old person, how he feels is of very great importance. Table 10 indicates that the large majority of the subjects examined answered this question to the effect that they did feel themselves to be in good health, i.e. 78% (74-82%) of the men and 64% (59-68%) of the women. With increasing age the percentage of those who subjectively rated themselves as healthy dropped only very slightly. In almost every age group, significantly more women than men complained about their state of health. Both results agree with those of the socio-medical study of 3000 aged in Groningen; the percentage of aged there who judged their own health favourably was, however, still higher, i.e. in the successive age groups from 82 to 85% of the men and from 76 to 72% of the women. The rather high percentage may be partially ascribed to the fact that the

aged often more easily accept reduced health than do younger people and, in addition, some of them have less ability to judge, in which a certain amount of euphoria may play an important part. It is also possible that the generation to which these oldest individuals belong did not find it proper to complain or to admit that there was anything wrong with their health which might imply helplessness. The percentage of the aged who found their own health poor was very small, i.e. 2 (1-3%) for the men and 4 (2-5%) for women. The last percentage rose somewhat in the successive age groups. These percentages once again lay a little lower than those in Groningen. Perhaps the actually rather small differences between the results of the two studies can partially be ascribed to the fact that the Groningen study was carried out by medical students (in their final year of study), and the aged (most of whom were Groningers who are frequently of a rather reserved nature) were as a result somewhat more guarded in their replies. Be that as it may, these facts clearly agree throughout with the general experience that women, even though they live longer than men, nevertheless complain more.

Effect of housing on the physical and psychological condition

Contrary to what might have been expected, rather few of the aged, i.e. 8% (5-9%) of the men and 13% (10-16%) of the women, stated that their housing had an adverse effect on their health. In this respect there was a significant difference between the sexes, even though it did not show in each age group individually. A particular effect due to age could not be found. The complaints made most frequently by both men and women pertained to dampness (2% among the men and 3% among the women) and a disagreeable atmosphere (2 and 3% respectively).

Medical assistance

a. When medical treatment was last received. Table 11 (page 66) shows that approximately 2/5 (35-45%) of the men and almost 3/5 (49-64%) of the women had had medical treatment in the three months preceding this study. This is another indication of how much the older members of the population call on the services of physicians.

The youngest group did so relatively least. This was especially the case for the women, for whom the percentage is nevertheless still 49 (for the men, 39%). The distinct difference between the sexes on this point agrees approximately with the difference in their judgement of their own health. It can also be seen that 15% (11-19%) of the men

Table 11. Time of last medical treatment; by sex and age groups; percentages
Tabel 11. Tijdstip van laatste geneeskundige behandeling; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Last medical treatment Laatste geneeskundige behandeling				Hardly never had medical treatment Praktisch nooit onder geneeskundige behandeling	Total Totaal	
	< 3 months ago < 3 mnd. geleden	3 months-1 yr. ago 3 mnd.-1 jr. geleden	1-5 yrs. ago 1-5 jr. geleden	> 5 yrs. ago > 5 jr. geleden		%	abs.
Men Mannen							
65-69	39.4	18.5	23.6	9.7	8.8	100	351
70-74	35.7	22.2	24.1	9.4	8.6	100	406
75-79	45.1	19.8	21.2	7.3	6.6	100	410
80-84	43.2	25.5	20.1	5.1	6.1	100	294
85 +	43.5	23.9	21.7	5.8	5.1	100	138
Total Totaal	41.0	21.5	22.3	7.8	7.4	100	1599
Women Vrouwen							
65-69	49.2	21.8	17.5	5.5	6.0	100	348
70-74	57.0	20.6	14.8	4.3	3.3	100	393
75-79	61.8	19.4	12.3	3.9	2.6	100	382
80-84	64.3	15.5	15.1	3.3	1.8	100	271
85 +	59.8	19.1	12.5	5.3	3.3	100	152
Total Totaal	58.0	19.5	14.6	4.4	3.5	100	1546

and 8% (5-12%) of the women had gone without asking for medical help during the preceding 5 years or even longer periods. About a third of the men and a fifth of the women had not consulted a doctor in the last year. It may thus be assumed that at least this fraction of the subjects had no chronic disease, or at least had no severe form of such a disease. These results do not entirely agree with those of the Groningen study. A comparison is, however, impossible, because in that study more than 8% of the subjects gave no answer on this point. Most of the relevant results, however, differ by only a few percent. Only the per-

centage of women who had had medical treatment during the preceding three months was appreciably higher in the T.N.O. study than the Groningen study (58% against 45%). The somewhat different composition of the sample undoubtedly has something to do with this. In the former study the older groups are very strongly represented, and these are just the groups which, as the Table also shows, ask for more medical attention than the younger groups.

The primary affection (the one for which the help was asked for in the first place: this does not mean that the doctor was not consulted for other sicknesses) for which the last medical treatment had been given was recorded for 1506 men and 1505 women. Little data on this point was obtained from those who had not consulted a physician in more than 5 years. Table 12 (page 68) summarizes the answers received.

Cardio-vascular and renal disease took first place (19-33%), as was to be expected, with a significantly higher percentage for women than men in all age groups with the exception of that of 80-84 years. The group of "other diseases" follows (18-28%) with almost identical percentages for both sexes. The group of diseases of the respiratory system (excluding neoplasms and tuberculosis) is very important (12-24%), with the men leading significantly in all age groups but one. The oldest group of men and the oldest group of women differ inversely. About one in 30 women reported that the last treatment was primarily for diabetes, a rather appreciable proportion.

b. Regular medical assistance. The results from the question "Do you consult a doctor regularly?" agree with results reported earlier, in the sense that many more women than men replied in the affirmative. Regular consultation was not more frequent in the older groups than in the younger ones.

The conditions for which these regular consultations were originally considered necessary were, as shown by Table 13 (page 69), again cardio-vascular or renal diseases. Almost half of the men and of the women who saw a doctor regularly did so for one or more diseases in this category. On this point there was no important difference between the sexes. Among the remaining groups of diseases for which a doctor was consulted regularly there was none especially remarkable for great frequency, even, for instance, prostate complaints. "Rheumatic" affections took second place among women, respiratory affections were second among men and third for women.

Table 12. Kind of principal affection for which last medical treatment was received; by sex and age groups; percentages

Tabel 12. Aard der voornaamste aandoening waarvoor de laatste keer geneeskundige behandeling plaatsvond; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Cardio-vascular and renal diseases Hart-, vaat-, nierziekten	Malignant neoplasms Kwaad-aardige nieuw-vormingen	Cerebral and mental diseases (suicide), apoplexy Hersen- en geesteszieken (suicide), apoplexie	Gastro-intestinal diseases Maag-darm-ziekten	Diseases of the respiratory system Ziekten van luchtwegen en ademhalings-organen	T.b.c.	Infective diseases Infectie-ziekten	Prostate complaints Prostaat lijden	"Rheuma-tism" Reuma ("Reuma-tiek")	Diabetes (only) Diabetes (alleen)	Other diseases Overige ziekten	Total Totaal	
												%	abs.
Men Mannen													
65-69	20.7	1.2	1.5	10.7	21.6	0.9	3.7	2.1	7.0	2.4	28.2	100	328
70-74	21.7	1.3	3.4	10.4	21.1	1.3	2.9	3.4	7.0	2.1	25.4	100	383
75-79	25.4	1.6	3.4	10.9	21.7	–	4.1	4.7	8.0	1.3	18.9	100	387
80-84	29.4	1.8	1.1	5.1	24.2	0.4	4.0	5.8	4.0	4.7	19.5	100	277
85 +	19.1	4.6	3.1	8.4	19.8	–	3.8	8.4	3.8	0.8	28.2	100	131
Total Totaal	23.9	1.7	2.5	9.4	21.8	0.6	3.7	4.3	6.4	2.3	23.4	100	1506
Women Vrouwen													
65-69	26.5	3.9	3.9	11.4	12.3	0.3	1.8	–	11.4	3.0	25.5	100	333
70-74	31.7	3.4	3.7	7.9	13.1	0.8	2.1	–	10.5	3.7	23.1	100	382
75-79	33.4	2.4	3.2	11.2	12.3	–	2.1	–	8.6	4.0	22.8	100	374
80-84	28.6	2.3	5.6	10.5	12.8	0.8	2.3	–	10.2	2.6	24.3	100	266
85 +	29.4	3.3	5.3	7.3	24.0	–	4.0	–	4.7	4.0	18.0	100	150
Total Totaal	30.0	3.1	4.1	9.9	13.8	0.4	2.3	–	9.6	3.5	23.3	100	1505

Table 13. Groups of principal diseases for which a physician was regularly consulted; by sex and age groups; percentages

Tabel 13. Aard der voornaamste ziekte, waarvoor geregeld een arts werd geraadpleegd; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No regular consultation Geen geregelde raadpleging	Geregelde raadpleging voor: Regular consultation on:										Total Totaal	
		Cardio-vascular and renal diseases Hart-, vaat-, nierziekten	Malignant neoplasms Kwaadaardige nieuwvormingen	Cerebral and mental diseases (suicide), apoplexy Hersen- en geesteszieken (suicide), apoplexie	Gastro-intestinal diseases Maag-darmziekten	Diseases of the respiratory system Ziekten van luchtwegen en ademhalingsorganen	Infective diseases Infectieziekten	Prostate complaints Prostaatlijden	"Rheumatism" Reuma ("Reumatiek")	Diabetes (only) Diabetes (alleen)	Other diseases Overige ziekten	%	abs.
Men Mannen													
65-69	64.6	15.1	0.9	2.0	4.3	3.4	–	0.9	2.3	1.4	5.1	100	351
70-74	68.5	14.3	0.5	2.0	2.5	4.4	0.5	1.2	1.7	1.0	3.4	100	406
75-79	62.0	18.0	0.5	3.2	1.9	5.4	0.5	1.7	1.7	1.2	3.9	100	411
80-84	57.9	20.3	0.7	1.7	1.7	4.7	0.3	3.1	1.4	4.1	4.1	100	295
85 +	59.2	13.1	2.9	0.7	2.2	7.3	–	2.9	2.2	2.2	7.3	100	137
Total Totaal	63.2	16.4	0.8	2.1	2.6	4.8	0.3	1.8	1.8	1.8	4.4	100	1600
Women Vrouwen													
65-69	50.9	19.8	3.2	2.9	5.7	1.1	0.3	–	6.6	3.2	6.3	100	348
70-74	42.4	27.4	2.0	2.3	2.0	3.8	0.3	–	6.4	3.1	10.3	100	391
75-79	42.4	27.0	1.3	1.0	4.7	4.5	–	–	5.2	3.7	10.2	100	382
80-84	43.1	23.6	1.8	4.4	3.0	3.7	0.4	–	6.3	4.1	9.6	100	271
85 +	47.3	23.7	2.6	6.6	2.0	5.3	–	–	4.6	2.6	5.3	100	152
Total Totaal	45.0	24.5	2.1	2.9	3.7	3.5	0.2	–	6.0	3.4	8.7	100	1544

c. Consulting a specialist after the age of 65. It would also seem likely that more women than men would have consulted a specialist after the age of 65. Table 14 indicates that this was the case, although the difference is less marked than might have been expected and not significant. The specialist was again most often consulted for disorders in the category of cardio-vascular and renal diseases, though the group of "other diseases" was here much more important than in the preceding case. The latter group, however, usually includes the consulting of an ophthalmologist for eyeglasses. (It later appeared that this could better have been put in a separate category.) Of the men who consulted a specialist, this was for a prostate disorder in 4, 8, 13, 18, and 27% in the successive age groups. In considering these figures and the percentages given in the Table, it should be kept in mind that, in connection with the shorter period after 65 involved, the younger groups would have had relatively much less reason to go to a specialist than the older groups.

d. Admission to a hospital after 65. After 65, 16-45% of the men and 21-40% of the women in the sample were admitted to hospital one or more times. Here, of course, age is again an important factor. Those who had only recently reached 65 had had much less chance of hospitalization than those who had long since passed this age. In addition, the younger aged may have had less illness requiring hospitalization, and they also sometimes have more possibilities for being nursed elsewhere than in a hospital than do the older aged. Such factors are expressed in the results shown in Table 15 (page 72).

Some disorders referred to rather infrequently in the foregoing points are now relatively more evident, such as prostate conditions, while others become relatively less important, i.e. not only cardio-vascular and renal diseases but also, for instance, respiratory disorders. Thus while 65 men reported their last visit to the doctor to have been primarily for prostate trouble, only 28 regularly consulted a physician for this condition, but after 65 a specialist was seen in 105 cases and 103 were hospitalized. The figures for diabetes as most important disease show a quite different picture: for men 35, 29, 24, and 14 cases in order of increasing age groups, and for women 52, 52, 45, and 22 cases.

Incidence of diabetes

Questions pertaining to the incidence of diabetes, by itself or in combination with other affections, were asked separately. Consideration of

Table 14. Groups of principal diseases for which a specialist was consulted after the age of 65 years; by sex and age groups; percentages

Tabel 14. Aard der voornaamste ziekte waarvoor na het 65ste jaar een specialist werd geraadpleegd; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No consultation Geen raadpleging	Consultation of a specialist after the 65th year of age because of Raadpleging van een specialist na het 65ste jaar wegens										Total Totaal	
		Cardio-vascular and renal diseases Hart-, vaat-, nierziekten	Malignant neoplasms Kwaad-aardige nieuw-vormingen	Cerebral and mental diseases (suicide), apoplexy Hersen- en geestesziekten (suicide), apoplexie	Gastro-intestinal diseases Maag-darm-ziekten	Diseases of the the respiratory system Ziekte van lucht-wegen en ademhalings-organen	Infective diseases Infectie-ziekten	Prostate complaints Prostaat lijden	"Rheuma-tism" Reuma ("reuma-tiek")	Diabetes (only) Diabetes (alleen)	Other diseases Overige ziekten	%	abs.
Men Mannen													
65-69	62.7	8.3	1.1	1.7	4.8	2.8	0.6	1.7	2.6	0.6	13.1	100	351
70-74	47.6	10.8	1.7	2.7	8.6	2.7	0.5	4.2	3.4	1.5	16.3	100	406
75-79	42.7	8.3	2.4	2.4	7.1	4.9	0.2	7.6	3.2	1.2	20.0	100	409
80-84	44.0	7.1	2.0	1.0	7.8	3.7	0.7	10.2	2.7	3.1	17.7	100	294
85 +	44.2	2.2	4.3	0.7	5.1	2.2	–	15.2	2.2	1.4	22.5	100	138
Total Totaal	48.8	8.2	2.1	1.9	6.9	3.4	0.4	6.6	2.9	1.5	17.3	100	1598
Women Vrouwen													
65-69	54.2	7.5	3.5	2.0	6.9	1.4	0.3	–	4.9	2.6	16.7	100	347
70-74	39.8	11.5	3.6	2.0	7.7	2.3	0.8	–	5.9	3.6	22.8	100	391
75-79	37.4	11.6	3.2	0.5	13.2	2.4	0.8	–	2.4	3.2	25.3	100	380
80-84	46.6	7.4	3.7	0.4	5.9	2.2	–	–	3.7	2.6	27.5	100	269
85 +	50.0	4.6	2.0	2.6	7.9	1.3	–	–	–	2.0	29.6	100	152
Total Totaal	44.7	9.2	3.3	1.4	8.6	2.0	0.5	–	3.8	2.9	23.6	100	1539

Table 15. Groups of principal diseases for which hospitalization occurred after the age of 65; by sex and age groups; percentages

Tabel 15. Aard der voornaamste ziekte waarvoor ziekenhuisopname na het 65ste jaar plaatsvond; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No hospitalization Geen ziekenhuisopname	Admission into a hospital after 65th year of age because of Ziekenhuisopname na het 65ste jaar wegens										Total Totaal	
		Cardio-vascular and renal diseases Hart-, vaat-, nierziekten	Malignant neoplasms Kwaadaardige nieuwvormingen	Cerebral and mental diseases (suicide), apoplexy Hersen- en geesteszieken (suicide), apoplexie	Gastro-intestinal diseases Maag- en darmziekten	Diseases of the respiratory system Ziekten van luchtwegen en ademhalingsorganen	Infective diseases Infectieziekten	Prostate complaints Prostaatlijden	"Rheumatism" Reuma ("reumatiek")	Diabetes (only) Diabetes (alleen)	Other diseases Overige ziekten	%	abs.
Men Mannen													
65-69	83.9	3.7	0.9	0.9	2.0	1.1	0.3	1.4	0.6	0.9	4.3	100	351
70-74	70.8	5.2	1.5	1.2	5.4	2.5	0.7	3.4	0.7	0.5	8.1	100	407
75-79	63.0	4.1	2.0	1.0	6.1	2.4	0.2	7.1	0.7	0.7	12.7	100	410
80-84	55.5	3.7	1.0	0.7	7.5	1.4	0.7	12.2	0.3	1.4	15.6	100	295
85 +	58.0	1.4	2.2	0.7	8.0	2.2	–	13.8	0.7	1.4	11.6	100	138
Total Totaal	68.0	4.0	1.4	0.9	5.4	1.9	0.4	6.4	0.6	0.9	10.1	100	1601
Women Vrouwen													
65-69	79.5	3.2	2.0	0.9	4.3	0.6	0.3	–	1.1	0.6	7.5	100	348
70-74	66.6	4.8	3.6	1.5	4.8	2.6	0.5	–	1.3	1.8	12.5	100	392
75-79	59.9	6.6	3.2	0.5	11.1	1.8	0.8	–	0.8	1.8	13.5	100	380
80-84	64.0	4.1	3.0	0.7	7.0	1.5	–	–	0.4	1.9	17.4	100	270
85 +	63.1	2.6	2.0	2.0	6.6	2.0	1.3	–	–	0.7	19.7	100	152
Total Totaal	67.2	4.5	2.9	1.0	6.8	1.7	0.5	–	0.8	1.4	13.2	100	1542

Table 16 (page 74 and 75) shows that the more intensive the medical treatment prescribed for diabetic patients, the less often were aged patients considered suitable for such treatment or had agreed to it.

It can also be seen that the number of patients who had diabetes in combination with some other disease was consistently about as large as the number of those who had only diabetes. The numbers are too small to judge whether a combination of diabetes and one particular other disease was relatively more frequent than the latter alone.

The data suggest that in all probability most of the aged who gave diabetes as the most important reason for their last medical treatment (or for whom this was reported by the general practitioner) were also under regular medical treatment primarily for this disease.

Complaints about sleep, appetite, defecation, and micturition

A large proportion of the men and a still greater proportion of the women (significantly differing from the men) had one or more of these complaints (see Table 17) (page 76).

The older the age group the smaller the difference between the sexes; above 85 it was no longer significant. In the successive age groups the number with complaints increased clearly: among men sharply from 29% to 55%, among women, where the number was already high, from 50% to 58%. Complaints solely about sleep were the most frequent, the women's double the men's. There was very little complaint about appetite, alone or in combination with the other functions listed above. Defecation by itself or in combination with other functions formed, as had also been shown by the Groningen study, a frequent reason for complaints. Comparing the results of the two studies on this point is, however, not fully possible, because in the Groningen study inquiry was made only about constipation, although with a distinction between occasional and frequent difficulties. Both studies, however, indicated that women had more such difficulties than men, while the latter had considerably more trouble with micturition. Differences in the techniques of inquiry and recording replies may have produced a higher percentage of reported micturition disturbances in the Groningen study.

In all, 16-20% of the men and 32-36% of the women had complaints about sleep, whether or not combined with complaints about appetite, defecation, or micturition; 3-5% and 7-9% respectively complained about appetite whether or not combined with complaints about sleep and defecation; 8-27% and 18-29% about defecation whether or not

Table 16. Frequency of diabetes at different levels of medical interference after the age of 60; by sex; absolute numbers

Tabel 16. Frequentie van diabetes bij toenemende medische bemoeiing, bij personen na het 60ste jaar; per geslacht; absolute aantallen

	Diabetes as principal disease Diabetes als voor-naamste aandoening	Diabetes + cardiovasc. and renal diseases Diabetes + hart- vaat-nier-ziekten	Diabetes + malignant neoplasms Diabetes + kwaad-aardige nieuwv.	Diabetes + diseases of brain etc. Diabetes + hersen- en geestes-ziekten	Diabetes + gastro-int. diseases Diabetes + maag-darmz.	Diabetes + respir. diseases Diabetes + ziekten v. luchtwegen	Diabetes + infect. diseases Diabetes + infectie-ziekten	Diabetes + prostate complaints Diabetes + prostaat-lijden	Diabetes + "rheuma-tism" Diabetes + "reuma-tiek"	Diabetes + other diseases Diabetes + overige ziekten	Total Totaal
Men/Mannen											
Last medical treatment for Laatste geneesk. behandeling voor	35	13	2	2	–	2	–	3	1	9	67
Regular medical consultation for Geregelde geneesk. behandeling voor	32	15	–	2	–	–	–	2	1	5	57
Specialist consultation for Specialistische behandeling voor	24	6	2	1	1	–	1	5	1	7	48
Hospital admission for Ziekenhuisopname voor	14	4	2	1	–	–	1	6	–	6	34

Women/Vrouwen											
Last medical treatment for Laatste geneesk. behandeling voor	52	19	4	4	6	7	–	–	10	8	110
Regular medical consultation for Geregeld geneesk. behandeling voor	55	20	3	4	8	2	–	–	10	2	104
Specialist consultation for Specialistische behandeling voor	46	13	5	1	8	1	1	–	2	8	85
Hospital admission for Ziekenhuisopname voor	24	9	3	1	8	2	1	–	1	6	55

Table 17. Complaints about sleeping, appetite, defecation and micturition; by sex and age groups; percentages

Tabel 17. Klachten over het slapen, de eetlust, ontlasting en urinelozing; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No complaints Geen klachten	Complaints about Klachten over									Total Totaal	
		Sleeping Het slapen	Appetite Eetlust	Defecation Ontlasting	Micturition Urinelozing	Sleeping and appetite Het slapen en eetlust	Sleeping and defecation Het slapen en ontlasting	Sleeping and micturition Het slapen en urinelozing	Appetite and defecation Eetlust en ontlasting	Defecation and micturition Ontlasting en urinelozing	%	abs.
Men Mannen												
65-69	71.1	9.7	1.7	4.3	6.0	1.4	2.6	2.0	0.3	0.9	100	351
70-74	63.3	13.3	1.5	8.1	5.7	0.7	1.7	2.5	0.7	2.5	100	407
75-79	58.7	10.5	1.2	8.8	8.3	0.7	2.7	3.7	1.7	3.7	100	409
80-84	56.0	9.5	1.0	9.5	8.5	2.0	3.7	4.7	1.0	4.1	100	295
85 +	45.1	6.6	1.5	14.6	12.4	1.5	4.4	5.8	1.5	6.6	100	137
Total Totaal	60.8	10.5	1.4	8.3	7.5	1.2	2.8	3.4	1.0	3.1	100	1599
Women Vrouwen												
65-69	50.0	23.3	2.0	7.2	2.6	3.2	8.6	1.1	1.4	0.6	100	348
70-74	47.6	23.2	2.8	9.2	2.5	2.8	8.1	1.5	1.0	1.3	100	393
75-79	44.5	17.5	2.1	11.3	1.8	3.7	12.3	2.6	1.3	2.9	100	382
80-84	41.6	18.5	3.3	12.2	4.4	4.1	5.9	3.7	1.9	4.4	100	270
85 +	42.2	19.3	3.3	17.3	1.3	2.0	7.3	3.3	2.0	2.0	100	150
Total Totaal	45.8	20.6	2.6	10.6	2.6	3.2	8.8	2.3	1.4	2.1	100	1543

combined with complaints about sleep, appetite, or micturition; and 9-25% and 4-13% about micturition, whether or not in combination with complaints about sleep and defecation. The number of aged who complained about defecation and micturition incrased appreciably with successive age groups. This was not the case with the number of persons complaining about sleep and appetite.

Use of alcohol and tobacco

The number of aged women who reported having taken alcoholic liquors in amounts worth mentioning during the greater part of their lives was very small (81). Twenty-five of these had limited themselves to less than 6 drinks of "jenever" (Dutch gin) per week and 45 to less than 11 "units of other drinks" (excepting beer and jenever). For the men the case was somewhat different; 38-46% said they had taken alcoholic liquor regularly or occasionally (or still did so at times). The successive age groups had more or less the same percentages (see Table VII). Jenever was the most popular drink, about 1/5th of all the men had taken 5 or less a week and about 1/10th had taken 6 or more. The oldest aged had probably formerly taken somewhat more drinks, especially of the jenever, than the youngest. Changes in cultural habits during the last century certainly serve to explain this to a great extent.

Cigarette smoking had played even less a part among women than drinking. Only 31 reported having smoked during the greater part of their lives, 25 of them less than 15 cigarettes per day. Only about 1/7th of the men (i.e. 13-17%) had never or practically never smoked (see Table VIII). Among the oldest there were somewhat more non-smokers than among the youngest. The latter smoked far more cigarettes or smoked a pipe far less than the former, who also used chewing tobacco more (or had formerly done so). More than 1/4th of all the men in all age groups reported smoking mainly cigars or having done so in the past.

It goes without saying that the above results must be regarded with the appropriate reservations!

Accidents

It can be seen from Table 18 (page 78) that an appreciable proportion, i.e. more than 1/5th of all the subjects, had had an accident of some seriousness after their 60th year. This was somewhat more frequently the case for women than for men, which can be ascribed to the fact that a relatively

Table 18. Accidents after the age of 60; by sex and age groups; percentages

Tabel 18. Ongevallen na het 60ste jaar; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No accident Geen ongeval	Accidents indoors Ongevallen binnenshuis		Accidents outdoors Ongevallen buitenshuis		Occupational accidents Bedrijfsongevallen	Total Totaal	
		Fall downstairs Val van de trap	Other accidents Andere ongevallen	Traffic accidents Verkeersongevallen	Other accidents Andere ongevallen		%	abs.
Men Mannen								
65-69	85.8	0.6	1.1	5.4	1.4	5.7	100	351
70-74	80.6	2.2	1.2	7.1	5.2	3.7	100	407
75-79	79.8	2.9	0.5	7.1	6.3	3.4	100	411
80-84	77.6	1.4	3.7	5.8	5.4	6.1	100	295
85 +	73.2	2.9	2.9	9.4	9.4	2.2	100	138
Total Totaal	80.3	1.9	1.6	6.7	5.1	4.4	100	1602
Women Vrouwen								
65-69	79.8	4.9	7.5	2.6	5.2	–	100	348
70-74	81.6	3.1	5.6	2.8	6.4	0.5	100	393
75-79	73.3	8.6	10.2	2.1	5.8	–	100	382
80-84	74.1	6.3	9.6	4.1	5.9	–	100	270
85 +	69.3	9.3	14.0	0.7	6.7	–	100	150
Total Totaal	76.7	6.0	8.7	2.6	5.9	0.1	100	1543

much higher percentage of women had had indoor accidents than had men (9-23% for women, 2-6% for men). For women, this percentage lay slightly higher in nearly all age groups than the percentage for outdoor accidents plus occupational accidents (7-10) which were more frequent for men (13-21). Among the men, traffic accidents in particular had taken a relatively large toll. The older age groups reported having had more accidents than the younger; they had, however, been exposed to risk longer as well. To what extent the older individuals had also had relatively more accidents cannot be established from these data.

Of the 310 men (see Table 19) who reported an accident after their 60th year, 40% had received scrapes, bruises, sprains, etc.; 28% (or almost 6% of all male subjects) a fracture; and 13% a cranial trauma (such as concussion). The relevant percentages for 351 women are 31, 45 (thus more

Table 19. Kind of accident; by sex and age groups; percentages

Tabel 19. Aard van het ongeval; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Fracture Fractuur	Concussion etc. Trauma capitis (w.o. commotio)	Burns Verbranding	Poisoning Vergiftiging	Crushing (amputation) Verbrijzeling (amputatie)	Sprains, abrasions etc. Distorsies, schaafwonden e.d.	Other Overige	Total Totaal	
								%	abs.
Men Mannen									
65-69	23.5	13.7	2.0	–	2.0	39.2	19.6	100	51
70-74	24.4	14.1	1.3	–	–	47.4	12.8	100	78
75-79	27.2	17.3	1.2	1.2	–	38.3	14.8	100	81
80-84	32.3	6.2	1.5	1.5	1.5	33.9	23.1	100	65
85 +	39.9	14.3	2.9	–	–	34.3	8.6	100	35
Total Totaal	28.4	13.2	1.6	0.6	0.6	39.5	16.1	100	310
Women Vrouwen									
65-69	38.4	10.8	6.2	–	–	32.3	12.3	100	65
70-74	47.8	9.9	1.4	–	–	28.2	12.7	100	71
75-79	42.5	12.9	1.0	–	–	31.7	11.9	100	101
80-84	41.5	7.1	5.7	–	–	34.3	11.4	100	70
85 +	56.9	9.1	–	–	–	29.5	4.5	100	44
Total Totaal	44.5	10.3	2.8	–	–	31.3	11.1	100	351

than 10% of all women subjects!), and 10. The latter therefore had more accidents which resulted in fractures. With increasing age the number of fractures also rose for both sexes. Burns and poisoning were proportionally of little importance.

I. THE PRESENCE OF PARTICULAR AFFECTIONS OR PATHOLOGICAL CONDITIONS IN THE HISTORY

Closer consideration of the results derived from the questions about the incidence of a number of specific affections and symptoms showed that in connection with their relative value it was desirable to limit reporting on those data to the diseases and complaints which may have been present at the time of the investigation and thus not to tabulate the previous

sicknesses. Data of this kind are in themselves of course useful, but provision must be made for the most exact possible collection of such data, which was impossible during the present investigation.

N.B. The answers to questions about the incidence of these diseases or their symptoms were thus in general made by the subjects themselves, but the investigating physician was requested to verify them insofar as his knowledge of the facts permitted. The results therefore do not always depend entirely on purely subjective replies.

1. "*Rheumatism*"

Complaints of rheumatism were proportionally about equal in all age groups of the same sex, i.e. for men in successive age groups in 22, 23, 24, 19 and 21% of the cases and for the women 34, 36, 39, 34, and 31%. There was, however, a significant difference between the sexes for the incidence of these complaints. No experience whatsoever of such complaints was reported by 64% of the men and 52% of the women.

2. *Dizziness, fainting spells, seizures*

Table 20. Complaints of vertigo, syncopes or seizures; by sex and age groups; percentages

Tabel 20. Klachten over duizelingen, flauwten of toevallen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Vertigo Duizelingen	Syncopes + seizures Flauwten + toevallen	No complaints Geen klachten	Total Totaal	
				%	abs.
Men/Mannen					
65-69	12.5	0.9	86.6	100	351
70-74	13.8	0.5	85.7	100	406
75-79	19.2	2.0	78.8	100	411
80-84	17.3	2.0	80.7	100	295
85 +	21.2	5.8	73.0	100	137
Total/Totaal	16.2	1.7	82.1	100	1600
Women/Vrouwen					
65-69	18.4	1.4	80.2	100	348
70-74	20.9	1.0	78.1	100	392
75-79	28.0	2.3	69.7	100	382
80-84	32.2	2.6	65.2	100	270
85 +	25.8	4.7	69.5	100	151
Total/Totaal	24.6	2.1	73.3	100	1543

From Table 20 it can be seen that only very few subjects reported fainting spells (20 men, 29 women) or seizures (7 men and 3 women). Dizzy spells might have been experienced by 13-21% of the men and 18-32% of the women; the older the group the more reports of this symptom. The difference in frequency between the 65-69 year old group and that of 80 and over is not significant for the men but is so for women. Women consistently reported being more troubled by dizzy spells than did men; however, with only a few exceptions the difference between the percentages of equivalent age groups was not significant. No experience whatsoever of dizziness, fainting or seizures was reported by 95% of the men and 60% of the women.

3. Hernias

The older the age group, the more reports of hernia. The percentages for the men's successive age groups were 10, 15, 17, 23, and 23 respectively; for women, 3, 4, 5, 6, and 8; for the former the difference between the youngest and oldest groups is also distinctly significant. The fact that the youngest aged are in general more prepared to be operated on for this condition undoubtedly played an important part here. The difference between the sexes is also consistently distinct. Sixty-five percent of the men and 89% of the women said they had never been troubled with a hernia.

4. Lung and respiratory-passage conditions

Table 21 (page 82) indicates that in the successive age groups 17, 15, 16, 17 and 22% of the men and 10, 10, 13, 16 and 17% of the women had one or more of the following disorders or symptoms: bronchial asthma, bronchitis, prolonged cough, lung ailments, pleurisy, spitting up blood, and tuberculosis of the lungs. This group of affections may thus be significantly more frequent for the men as a whole than for the women as a whole. They were somewhat more frequent for the older than the younger groups (but not significantly so). Bronchitis was mentioned most frequently as the principal specific illness (7-12% of the men, 6-12% of the women). Bronchial asthma was given as principal affection by 26 men and 16 women. At the time of the investigation, 5 men and 4 women reported having lung tuberculosis, 1 man reported spitting blood, 1 man and 1 woman reported having pleurisy, and a "lung ailment" was noted for 4 men and 2 women. For both men and women the percentage who

Table 21. Complaints of disorders of the respiratory system; by sex and age groups; percentages

Tabel 21. Klachten over aandoeningen van longen en/of luchtwegen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Bronchial asthma Asthma bronchiale	Bronchitis	Prolonged coughing Langdurig hoesten	Lung disorders, pleurisy, haemoptysis, pulmonary t.b.c. Longlijden, pleuritis, bloedspuwing, long t.b.c.	No complaints Geen klachten	Total Totaal	
						%	abs.
Men Mannen							
65-69	1.4	9.4	4.8	1.1	83.3	100	351
70-74	2.2	7.4	4.4	0.9	85.1	100	406
75-79	1.2	10.7	3.7	0.7	83.7	100	410
80-84	2.0	10.8	4.1	–	83.1	100	295
85 +	0.7	12.3	9.4	–	77.6	100	138
Total Totaal	1.6	9.8	4.7	0.8	83.1	100	1600
Women Vrouwen							
65-69	0.3	5.5	4.0	0.6	89.6	100	348
70-74	1.5	5.6	2.6	0.6	89.7	100	392
75-79	1.3	7.9	3.1	0.3	87.4	100	382
80-84	0.7	9.2	5.2	0.8	84.1	100	271
85 +	1.3	11.9	4.0	–	82.8	100	151
Total Totaal	1.0	7.4	3.6	0.5	87.5	100	1544

reported never having been troubled by any of these affections was 69. The high frequency of complaints of the respiratory organs among the aged is in agreement with the clinical impression of physicians who treat elderly patients, at least in the West European climate.

5. *Cardio-vascular diseases*

Table 22 gives a picture of the frequency of incidence in the histories of the complaints and symptoms which the aged considered most important

Table 22. Complaints of cardio-vascular disorders; by sex and age groups; percentages

Tabel 22. Klachten over hart- en vaataandoeningen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	"Heart disorders" „Hartlijden"	Palpitations Hartkloppingen	Pain in the heart region Pijn in de hartstreek	Feelings of oppression Beklemming op de borst	Dyspnea Kortademigheid	Dyspnea with exertion Kortademigheid bij inspanning	Edematous feet in the evening 's Avonds dikke voeten	No complaints Geen klachten	Total Totaal %	Total Totaal abs.
Men Mannen										
65-69	2.3	2.8	4.0	4.6	3.7	8.0	2.3	72.3	100	351
70-74	2.0	1.7	3.2	4.4	4.0	9.1	2.5	73.1	100	407
75-79	4.4	2.4	3.4	4.6	6.1	10.2	4.1	65.8	100	411
80-84	4.1	1.4	2.7	6.4	8.8	13.2	6.4	57.0	100	295
85 +	4.3	2.2	2.2	2.2	5.1	14.5	6.5	63.0	100	138
Total Totaal	3.2	2.1	3.2	4.7	5.2	10.4	4.0	67.2	100	1602
Women Vrouwen										
65-69	3.7	7.8	5.5	4.9	3.2	12.6	7.5	54.8	100	348
70-74	6.6	6.6	2.8	5.9	6.6	13.5	6.1	51.9	100	393
75-79	6.5	7.6	3.9	4.7	4.7	13.9	6.0	52.7	100	382
80-84	6.7	8.1	2.6	2.6	7.4	14.8	4.4	53.4	100	270
85 +	6.0	4.0	2.6	5.3	9.3	13.2	8.6	51.0	100	151
Total Totaal	5.9	7.1	3.6	4.7	5.8	13.6	6.3	53.0	100	1544

in connection with the condition of their cardio-vascular system. The numbers of complaints relatively increased with age for men: from 28% in the youngest group to 43% in the 80-84 group, and 37% in the group over 85. By contrast, the number of women remained more or less the same at 45-49%. The most frequently mentioned as principal complaint was shortness of breath with exertion; for the successive age groups it was present in 8-15% of the men and remained rather constant at 13-15% for the women. This symptom, like palpitations, "disorder of the heart," and swollen feet in the evening were consistently more frequently reported by women than men. If "pain in the heart area" and "chest constriction" are considered anginous, it then appears that they were mentioned by 4-9% of the men and 5-10% of the women, or rather high percentages of the subjects. A clear-cut age effect in these frequencies is not demon-

strable. An explanation of the fact that complaints of this nature were not more frequent among the oldest groups than the younger is perhaps that patients with such complaints frequently die earlier than persons without such symptoms. Sixty-three percent of the men and 47% of the women said they had never had heart complaints.

6. Blood pressure abnormalities

Table 23. Subjects' reports on their tension; by sex and age groups; percentages

Tabel 23. Mededelingen van de onderzochten over hun bloeddruk; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Hypotension Verlaagde bloeddruk	Slight hypertension Iets verhoogde bloeddruk	Considerable hypertension Sterk verhoogde bloeddruk	No complaints Geen klachten	Total Totaal	
					%	abs.
Men Mannen						
65-69	2.8	10.5	2.2	84.5	100	313
70-74	2.6	10.2	2.5	84.7	100	354
75-79	4.0	12.9	4.5	78.6	100	356
80-84	1.6	13.5	2.4	82.5	100	251
85 +	3.6	9.1	1.8	85.5	100	110
Total/Totaal	2.9	11.5	2.9	82.7	100	1384
Women Vrouwen						
65-69	2.0	22.9	10.0	65.1	100	301
70-74	1.1	26.2	10.7	62.0	100	366
75-79	2.9	25.6	10.2	61.3	100	344
80-84	2.1	23.2	7.7	67.0	100	233
85 +	2.9	20.6	8.8	67.7	100	136
Total/Totaal	2.1	24.3	9.7	63.9	100	1380

A much larger number of women than men reported, as shown in Table 23, that they had abnormal blood pressure: 32-39% against 15-21%. No age effect could be distinguished in the frequency for either sex. Too low blood pressure was reported by 2.9% of all men subjects (1384) and 2.1% of all women subjects (1380). Of these, 6 men and 5 women reported very low blood pressure. By contrast, very high blood pressure occurred, according to their reports, in 40 men and 134 women. About 80% of the

1330 men and 60% of the 1304 women who had answered the questions pertaining to a previous or present abnormal blood pressure said that they had never been bothered by such a condition.

7. Disorders of the gastro-intestinal tract and liver

Only relatively few of the aged subjects gave a positive answer to the question of whether at the time of the investigation they had a stomach or duodenal ulcer, other affections of the stomach or intestines, liver diseases, jaundice, gall stones, haematemesis, or bloody diarrhea: 7-10% of the men and 12-15% of the women. The difference between the sexes is significant, although it is not so between all the separate equivalent age groups. The frequency in the various age groups per sex was practically always about equally large. Twenty-two men and the same number of women reported a stomach or duodenal ulcer, other gastro-intestinal conditions occurred in 4-6% of the men and 4-7% of the women. Liver diseases were reported by 6 men and 3 women, jaundice by 4 men and 6 women, gall stones by 16 men and 81(!) women, haematemesis by 2 men, and bloody diarrhea by 5 men and 6 women. By their own reports, 86% of the men and 61% of the women had had neither past nor present trouble from stomach or intestinal affections.

8. Diabetes and other metabolic diseases

The percentage of men in order of increasing age who said they had diabetes (mellitus) was 3.4, 2.5, 3.7, 6.5, and 5.1, the disease thus being reported somewhat more frequently in the older groups. This was not the case for women; the percentages were 6.4, 7.4, 7.1, 7.8, and 6.0. Significantly more women than men reported having this disease. Three men and 14 women said they suffered from metabolic diseases other than diabetes, and one man said he had both diabetes and another metabolic disease.

Of the men 95% and of the women 91% reported never having had diabetes or any other metabolic disease.

Rather many subjects thought they had diabetes. It is noteworthy that the above mentioned percentages lie higher than those of aged persons who said that their last medical treatment had been primarily for this disease. This could be an indication that the disease was often not of a serious nature.

9. Urogenital system

In comparison with the gastro-intestinal affections, the frequency of urogenital disorders was smaller: 4-12% for men and 6-10% for women. The percentage rose for men with increasing age, i.e.4, 4, 7, 10, 12; for women no clear age affect could be identified. Bladder affections were the most frequently reported, by 55 men and 63 women. Diseases of the sex organs followed: 26 men and 39 women; kidney diseases: 6 men and 14 women; "protein in the urine": 8 men and 12 women; haematuria: 4 men and 2 women; and kidney stones: 4 men and 1 woman. Complaints or disturbances of these organs were reported as never having been experienced by 81% of the men and 70% of the women.

10. Tropical diseases

Only 3 men and 6 women, all from different age groups, answered positively the question as to whether at the time of the study they suffered from a tropical disease. By their own report, 96% of the men and 98% of the women had never had a tropical disease.

II. PRESENCE OF ONLY ONE DISEASE OR OF A GROUP OF AFFECTIONS SIMULTANEOUSLY

Among the men 409 or 25%, and among the women 336 or 22% reported having only one of the affections or symptoms discussed above. The order of frequency for these conditions was for the men "rheumatism" 103, heart disease 77, hernias 55, lung affections 47, dizziness, etc. 37, blood pressure abnormalities 35, gastro-intestinal disorders 18, metabolic disturbances 15, and urogenital diseases 13 cases. The sequence for the women was "rheumatism" 91, heart conditions 76, blood pressure abnormalities 69, gastro-intestinal affections 29, dizziness 27, lung affections 18, metabolic disturbances 12, urogenital disorders 8, and hernia 6 cases.

Simultaneous presence of two diseases or groups of affections

In the consecutive age groups for men and women the following figures and percentages (calculated from the total sample) were found for persons who reported having two (but not more than two) diseases or groups of affections or symptoms simultaneously:

men: 140 (40%), 120 (30%), 178 (43%), 136 (46%), and 38 (27%).
women: 146 (42%), 188 (48%), 160 (42%), 134 (50%), and 68 (45%).

The most frequent combinations of affections were, according to the answers given, for men: heart + lung conditions (37 cases) followed by heart + blood pressure abnormalities (36); and for women: heart + blood pressure abnormalities (73) and heart trouble + "rheumatic" affections (54). The other combinations were markedly lower in frequency.

If all combinations of two or more diseases were examined, the most frequent combinations of two diseases or disease groups among men were heart + blood pressure abnormalities 133 (expected figure if both diseases were to occur independently: 75) and heart abnormalities + dizziness, fainting, seizures 123 (expectation 73); for women heart + blood pressure abnormalities 307 (expectation 230), heart abnormalities + "rheumatic" symptoms 263 (expectation 228) and heart abnormalities + dizziness etc. 228 (expectation 169) cases. In most cases the figures found for other combinations of two diseases did not differ a great deal from the figures which were expected, with the exception of the combination of blood pressure abnormalities + dizziness etc. Certain combinations of diseases therefore occurred with much greater frequency than would have been expected on statistical grounds. This result is of course partly connected with the often inherent organic relationship between such conditions or symptoms, such as heart affections and blood pressure abnormalities.

Simultaneity of various diseases or groups of diseases or symptoms

For the subjects from whom answers were obtained to all questions concerning the presence of certain diseases or symptoms at the time of the examination, it was investigated separately what percentage then had 0, 1, 2, 3, 4, 5, 6, or even 7 of the various diseases or symptoms. The percentages found for men were 29, 30, 22, 11, 5, 2, 0.4, and 0.1; for women: 17, 25, 26, 19, 9, 3, 1, and 0.3. Age showed no clear relationship with these figures, the percentages shifting up and down for the successive age groups around the above averages. At most it might be said that in the older groups somewhat more groups of diseases or abnormal conditions were simultaneously present than in the younger groups. The data do show distinctly, however, that more men than women had no complaint or complaints in only one group of diseases, and that it was more women than men who had complaints of two or more diseases or groups of diseases. It was reported by 25, 5, and 1 men and 43, 14, and 4 women that they had simultaneously 5, 6, and 7 different disturbances respectively.

X-ray and fluoroscopic examination

The percentage of aged which had never been examined in these ways increased sharply with the successive age groups, from 6 among men of 65-69 to 38 among men of 85 and over; the repective percentages for women are 12 and 42 (see Table 24). The oldest aged had on the one

Table 24. Results of X-ray examination; by sex and age groups; percentages

Tabel 24. Resultaten bij doorlichting; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No radioscopy at all Nooit doorgelicht	X-rayed during mass or industrial radioscopy Doorgelicht b.g.v. massa- of bedrijfsdoorlichting		X-rayed, not during mass or industrial radioscopy Doorgelicht niet b.g.v. massa- of bedrijfsdoorlichting		Total Totaal	
		Result always negative Resultaat steeds negatief	Result positive at least once Resultaat ten minste eenmaal positief	Result always negative Resultaat steeds negatief	Result positive at least once Resultaat ten minste eenmaal positief	%	abs.
Men Mannen							
65-69	5.7	82.1	–	8.5	3.7	100	351
70-74	10.1	75.0	0.7	11.5	2.7	100	407
75-79	20.7	70.6	0.7	6.1	1.9	100	411
80-84	22.4	70.1	0.3	6.9	0.3	100	290
85 +	38.0	53.9	1.5	6.6	–	100	137
Total Totaal	16.5	72.6	0.6	8.2	2.1	100	1596
Women Vrouwen							
65-69	11.8	73.8	0.6	11.2	2.6	100	348
70-74	15.1	71.4	0.5	10.2	2.8	100	392
75-79	23.6	61.4	0.3	13.1	1.6	100	382
80-84	29.7	56.4	–	12.4	1.5	100	266
85 +	42.4	47.0	0.7	8.6	1.3	100	151
Total Totaal	21.6	64.5	0.4	11.4	2.1	100	1539

hand had more opportunity to be included in mass or industrial checks than the younger, but on the other hand they would have been more

likely to have avoided the mass X-ray examinations of recent years. Reports on these mass examinations frequently point out this undesirable situation. Insofar as old people can certainly constitute a source of tuberculosis infection for younger ones, these percentages give cause for concern. The large majority appear to be included in mass or industrial examinations. The number of positive cases found was quite small, especially in comparison with the results of other types of mass screening. The more the aged belonged to a younger age group, the more positive cases were found during the other types of examination.

Changes in weight

According to their own opinions, the weight of the majority had remained about the same during the two preceding years. In each age group this was the case for about 2/3rds of the men (65-70%) and 3/5ths of the women (57-62%). (No answer was obtained from 39 men and 66 women.) Significantly more women than men reported a change in weight. In the separate age groups, however, no significant difference between the sexes could be established. More aged, and especially more of the women among them, had lost rather than gained weight; of the men 11-18% had gained, 14-20% had lost; of the women 9-17% had gained and 22-30% had lost. The gain or loss was, according to them, less than 5 kilograms in the majority of cases. Only a very few had gained more than 10 kilograms, and only about 20 to 30 people had lost more than that. No clear relationship with age could be distinguished here. The fact that the report often had to do with an impression rather than measurements means that no much value can be attached to these results.

Specific dietary practices

Appreciably more women (45-56%) than men (21-29%) had specific dietary habits at the time of the study. There were no important differences between the successive age groups, although proportionately the oldest had special diets the least. The most important dietetic variant was the saltless or low-salt diet; 11-18% of the men and 23-33% of the women subjects were on such a diet. Here, too, there was little indication of an age effect: only the group of oldest men and youngest women showed somewhat different or a good deal lower percentages than the average (11 and 23% respectively). Other types of diet (such as vegetarian) were very infrequent among the men. For women, especially in

the youngest group (11%), a low-fat diet (6-11%) and the group of "other diets and unusual dietetic habits" were important (5-7%). Here, too, it was again the oldest groups who made relatively the least use of such diets.

Use of drugs

Table 25. Use of medicine; by sex and age groups; percentages

Tabel 25. Geneesmiddelgebruik; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	None Geen	On doctor's prescription Op voorschrift van de arts	On own initiative Volgens eigen inzicht	On doctor's prescription as well as on own initiative Zowel op voorschrift van de arts als volgens eigen inzicht	Total Totaal %	 abs.
Men Mannen						
65-69	57.3	25.9	8.8	8.0	100	351
70-74	56.1	24.8	11.5	7.6	100	407
75-79	48.2	29.8	11.0	11.0	100	410
80-84	50.3	33.0	6.5	10.2	100	294
85 +	39.1	37.0	14.5	9.4	100	138
Total Totaal	51.8	28.9	10.1	9.2	100	1600
Women Vrouwen						
65-69	41.2	28.4	12.9	17.5	100	348
70-74	31.6	38.1	10.7	19.6	100	393
75-79	31.8	41.7	9.2	17.3	100	381
80-84	29.5	42.8	8.1	19.6	100	271
85 +	32.2	40.2	11.2	16.4	100	152
Total Totaal	33.5	37.8	10.4	18.3	100	1545

As was to be expected from the reported frequency of medical help, far fewer men (43-61%) than women (59-71%) used drugs (see Table 25). In itself this use was, however, appreciable in both sexes. For men, use increased markedly with age (from 43% in the youngest to 61% in the oldest group); for women, this use was already high for the younger groups, only the youngest using less: 59% in relation to the average of 67% for all women together. The majority of the aged who used

medicines said they did so on doctor's advice; 25-37% of all the men subjects and 29-43% of all the women. These percentages agree rather well with those from the Groningen study. The percentages for the total use of drugs were much lower for this last investigation. This is related to the fact that in that study only *regular* use was inquired about.

In general there is a distinct increase with age in the use of drugs only on doctors' prescription: for men the percentage for the youngest and oldest groups being 26 and 37 respectively, for women 28 and 40. More than 10% (7-15%) of all subjects took medicines only on their own initiative; on this point there was no difference between the sexes nor was any age effect demonstrable. This last also held for those who used drugs both by prescription and on their own initiative; the percentages for women, however, are approximately twice as high (16-20%) as those for men (8-11%). There are thus various indications that in any case the aged use large quantities of drugs in one or another form. It would be interesting to know whether this use is justified, and, if not, what measures should be taken to limit it. It is also of great importance to investigate whether the aged use relatively more drugs than younger people.

Closer analysis (see Table 26, page 92) of the 328 men and 467 women who used drugs both on their own initiative and with or without doctor's prescription indicated that in almost half of the cases it was a matter of laxatives; 26-50% of the men took laxatives occasionally and 5-15% did so regularly; for women these percentages are 26-44 and 7-27. This large-scale use is obviously connected with the previously mentioned high frequency of defecation difficulties. Also involved is the fact that rather many people even at earlier ages consider taking laxatives as more or less normal. (In Groningen, too, most of the "household remedies" were employed for constipation).

The use of soporifics is also considerable: 6-16% of the men and 13-26% of the women thought they needed them occasionally or regularly. Regular use was most frequent in the older groups, occasional use in the younger groups. Vitamin preparations were used by not less than 16% of the men of the 65-69 year group (but not at all by men of 85 and over, which had apparently not prevented them from reaching this advanced age!) and also by 4-6% of the women. The use of "herbs" was minimal, but that of all "other" sorts was again high, and significantly more so for men (26%) than women (19%). The regular use of these last increased noticeably among men with increasing age, but otherwise not much of an age effect could be distinguished.

Table 26. Kind and amount of medicine taken on own initiative; by sex and age groups; percentages

Tabel 26. Aard en mate van geneesmiddelengebruik volgens eigen inzicht; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Irregularly Ongeregeld					Regularly Geregeld					Total Totaal	
	Laxatives Laxeer-middelen	Sleeping pills Slaap-middelen	Vitamins Vitaminen	Medicinal herbs Kruiden	Other Overige	Laxatives Laxeer-middelen	Sleeping pills Slaap-middelen	Vitamins Vitaminen	Medicinal herbs Kruiden	Other Overige	%	abs.
Men Mannen												
65-69	25.8	16.1	4.8	–	27.6	4.8	–	16.1	1.6	3.2	100	62
70-74	31.7	6.1	6.1	1.2	22.0	14.6	4.9	7.3	1.2	4.9	100	82
75-79	39.5	11.5	4.2	2.1	13.5	11.5	3.1	5.2	2.1	7.3	100	96
80-84	50.0	5.8	3.8	1.9	7.7	13.5	–	3.8	–	13.5	100	52
85 +	36.0	8.3	–	2.8	16.7	13.9	5.6	–	–	16.7	100	36
Total Totaal	36.3	9.8	4.3	1.5	17.7	11.6	2.7	7.0	1.2	7.9	100	328
Women Vrouwen												
65-69	25.7	21.1	4.6	–	16.5	11.0	4.6	6.4	2.8	7.3	100	109
70-74	33.0	20.2	6.5	5.6	12.9	6.5	3.2	5.6	–	6.5	100	124
75-79	43.5	15.7	5.6	1.9	12.0	10.2	2.8	3.7	0.9	3.7	100	108
80-84	40.9	7.4	3.7	–	16.0	16.0	6.2	4.9	–	4.9	100	81
85 +	35.6	6.7	4.4	4.4	6.7	26.7	6.7	4.4	4.4	–	100	45
Total Totaal	35.4	15.8	5.1	2.4	13.5	12.0	4.3	5.1	1.3	5.1	100	467

Previous residence in the tropics

Only a very few of the subjects had spent time in the tropics. Among the men, 43 reported having done so before their fortieth year, and 8 that they had been there only after that age; 39 both before and after it. In total, therefore, this was below 6%. For the women the figures were 9, 7, and 22; combined, therefore, 2½% of all the women subjects.

Since some of those who had been in the tropics had remained there less than 5 years, it can be assumed that there can hardly be any question of an effect on the results of this investigation from such residence.

Previous activities in sports

Of the men, 81-82% had never done any sports, and for the women this was 90-93%. The younger the aged group the more its members had participated (39% of the men of 65-69 and, by contrast, 18% of the men of 85 and over). This entirely agrees with what would have been expected, since sport was practically non-existent when the oldest groups were young. This element was frequently reflected in the answers to questions concerning individual sports. Nine percent of the men between 65 and 69 had played football, primarily before their 40th year, swimming had been done before that age by 6%, after it by 5%, gymnastics and or athletics by 9% and 2% and other sports by 5% and 3% respectively. In the youngest group of women the percentages for swimming are 2 and 3, for gymnastics 2 and 0, and other sports 2 and 0.6.

Any former physical exercise or sport can therefore certainly not have affected health in any appreciable degree, particularly that of the women.

Leukorrhea

Of the women subjects, 64-74% had never had this condition, and 23-29% had had it only formerly. Only 3-8% had it at the time of the investigation. Proportionately few women in the older groups complained of it than in the younger groups. Only about 2% (0.8-3%) had first complained of leukorrhea shortly before.

Abnormalities of pregnancy, delivery, or childbed

Of the 1265 women who were able to reply to questioning on this point, 73-84% had had not suffered from such abnormalities. The older the

age group the less abnormalities were reported. This may be partly ascribed to a certain degree of amnesia, partly to the fact that less attention was paid to such abnormalities formerly, and possibly also to the unfavourable effect of such abnormalities on the lifespan of women who experienced them.

Age at menopause

The frequency distribution of the ages at which menopause had its onset did not indicate that it had begun earlier or later among the women of the younger group than among those of the older groups. In 4% it began before the fortieth year, in 7, 7, 11, 10, 23, and 25% at an age of 40 or 41; 42 or 43; 44 or 45; 46 or 47; 48 or 49; and 50 or 51 years respectively, and for 13%(!) at the age of 52 or older. In 1/4th, 1/2, and 3/4 of the women, menstruation stopped at or before the age of 46, at or before the age of 49, and at or before the age of 51, respectively. These figures indicate a wider distribution than is commonly assumed.

Troublesome complaints for which the doctor was not consulted

Only a small number of subjects of both sexes in each age group reported having troublesome complaints for which the doctor was not consulted (men 7-11%, women 8-12%). The most important reason for not asking medical assistance was that in the opinion of the subjects the complaints were slight (3-5% of the subjects) or that "there wasn't much to be done about it anyhow" (men 2-5% and women 3-5%). Distance, finances, or "modesty" were factors of very little importance.

Housekeeping and other activities, including their connection with health

a. Cooking. Consideration of Table IX shows that as was to be expected there were only a few men who cooked for themselves. The percentage between 70 and 85 years (8-10) is even somewhat higher than before the 70th year (5), which may be connected with the fact that the number of widowers increases especially in the former period. After the 85th year, cooking obviously becomes onerous, but nevertheless the percentage of men who cooked at over 80 is larger than in the youngest group. The percentage of women who cooked for themselves drops sharply with increasing age. Until their 80th year, 70% of the women cooked for themselves, after the 85th year 30% still did so. The above conclusions

and the percentages on which they are based agree very well with those of the study made in Groningen. Where for the group of men of 65-69 the wife still did the cooking in 77% of all cases and others did it in 18%, this ratio was exactly reversed for the oldest group. In only 0.6-2% of the cases did the man cook for the wife, so that when they could not cope with the cooking themselves they had almost always to turn to others for help. Cooking by both husband and wife together was equally seldom reported.

Of the 1451 men who said they did not cook for themselves, a percentage which dropped rapidly with age from 78 in the youngest to 43 in the oldest group considered that if necessary they could cook themselves (see Table X). For 499 women these percentages were 69 and 32. As in the Groningen study, these figures were lower for the women than for the men. The cause is probably that the former have a better grasp of the difficulties caused by physical limitations than do the latter, since they have had more experience. A percentage of men increasing with age from 16 to 27 stated that they had never done any cooking. The percentages were lower than with the Groningen study but showed further the same pattern. Only 12% of all men but, by contrast, 41% of all women reported physical or mental disturbances to be the impediment to cooking. Leg and/or arm complaints and general weakness formed the most important single reason for 0.9-4% and 0.9-9% of the men and 9-17% and 6-21% of the women. Mental aberrations were responsible in the case of 0.8-3% of the men and 0-13% of the women. The two last-mentioned reasons occurred relatively more often with increasing age.

b. Shopping. Comparison of Table XI with Table IX shows that many more men did shopping and errands than cooking. The men between 70 and 85 were especially relatively active in this: 25-43% did it all themselves. The percentage of women in each successive age group dropped rapidly, in total from 68 to 14. The general picture is comparable with the Groningen results, although the percentages were again somewhat higher there. For the youngest men, the wife still frequently did the shopping (46%); in each successive age group this number was lower, and the errands were done by their wives for only 7% of the oldest men. Both a drop in strength and a rise in the number of widowers with increasing age have their effect here. The women were replaced by their husbands in this activity rather seldom (6-12% of the cases), which in part may obviously be ascribed to the large number who no longer had husbands. In only a few cases did both partners share this activity.

As in Groningen, rather a large number of men considered themselves in condition to do the shopping, although the number naturally decreased noticeably with age (see Table XII). Once again the women who did no shopping were in actuality far more incapable of doing so than the men. Leg and/or arm complaints were again (and of course to a much greater degree than for cooking) the principal reason for this incapacity. The reasons next in order were: shortness of breath and general weakness. Mental difficulties interfered with an average of 2% (1-3%) of the men and 5% (0.9-12%) of the women.

c. Management of money. More than half of the men (54-59%) and of the women (40-70%) arranged their own financial affairs and took care of their own money, with the exception of the oldest group of women (40%) (Table XIII). It is striking that even at the age of 65-69 years a third of the men left the management of the finances to their wives.

In the "younger groups" even more women than men managed their own finances, but the difference is in most cases not significant. No age effect could be found for the men on this point; for women the percentage dropped with increasing age. Among the men in the younger age groups, it was especially their wives who, if necessary, took over this responsibility (just as, as a matter of fact, if to a lesser degree, it was the husbands for the wives), but at a more advanced age it was primarily other persons who did this. The joint management of the finances by a couple was seldom encountered. A great majority of those who did not care for their affairs themselves were nevertheless of the opinion that they were well able to do so. This was especially true in the younger groups: 80-87% of the men up to the age of 80 and 89% of the women of 65-69. The age effect was clearest for the women. The percentage of women who felt themselves capable in handling money was in fact consistently much lower than that of the men, with the exception of the youngest group. Mental aberrations self-evidently formed the most important cause of inability. The age influence here was unmistakable: among men the percentage rose from 8 in the 65-69 group to 25 in the oldest group; for women it went from 3 to 26. General weakness, especially for the oldest women, formed an equally important hindrance.

d. Washing and dressing. On this point too there was little discrepancy with the Groningen results. In the successive age groups difficulties in washing and dressing were reported by 3%, 3%, 6%, 8%, and 15% of the men and 3%, 4%, 8%, 17%, and 26% of the women: only in the oldest

groups and then in particular for the women, was there something of a problem here. Arm and/or leg complaints were usually responsible for most of the difficulties: in the case of 42 of the 93 men and 58 of the 140 women who could wash themselves only with difficulty or not at all. In addition, general weakness of course played a certain part here too: for 16 men and 31 women.

e. Climbing stairs. In the Groningen study, questions about such activities were always accompanied by inquiries as to whether they were done with difficulty or had become entirely impossible, which may have led to a greater tendency to report smaller difficulties. This may explain the fact that for some of these activities the Groningen percentages lie higher than those of the nation-wide study, as is the case, for instance, for stair climbing. The difference between the corresponding percentages is, however, almost always less than 10.

A percentage of the men which with increasing age rose from 11 to 30 said they could not use stairs at all or only with difficulty. The percentage for the women was appreciably less favourable, being 18% and 58%, which agrees with both the Groningen study and one done in England by Sheldon [21]. The greatest hindrance to stair climbing was shortness of breath, followed by leg and/or arm complaints, which will cause no surprise; 5-12% and 2-9% of all the men and 9-20% and 7-21% of all the women examined fell into this category. The arm and/or leg complaints became relatively more important in the older groups. General weakness then also played a greater part.

f. Walking 100 meters. The results having to do with the question of whether the subject could walk 100 meters easily and if not what the reason for the incapacity was, showed only slight differences from those for the question concerning the use of stairs. The percentages of those who had no difficulty in going this distance were only slightly higher than those mentioned in the preceding paragraph. Shortness of breath played a somewhat smaller part, and leg and/or arm complaints a somewhat larger one than in stair climbing.

[21] Sheldon, J. H.; The social medicine of old age; Oxford University Press, London 1948.

CHAPTER IV

RESULTS OF THE MEASUREMENTS

This section contains the results of a number of measurements. In general the data are confined to the mean for each age and sex group, the pertinent standard deviation, and the absolute number of measurements performed. The values determined for weight, height, sitting height, chest circumference, and the difference in chest circumference between expiration and inspiration are smaller for each successive age group. This is due either to aging or to changes in physical structure in succeeding generations. These observations are interesting, the more so since to the best of my knowledge one or two of them have not been previously reported by other investigations of this kind.

WEIGHT

a. with clothes

Table 27 clearly indicates that (with the exception of the group of men of 85 and over) the older the group the lower the mean weight. For women the mean weight was consistently significantly lower than for men. The standard deviation was almost always about 10 kg.

b. without clothes

The difference between the mean weight with and without clothes found by this study was much smaller for the women than the men. From this it can be inferred that the former wore lighter clothing than the latter. The average weight of men in the youngest group was 70.6 kg., in each of the following groups it was lower, and in the oldest it was only 65.6 kg. For women these weights were 68.8 and 59.8 kg. Whether this drop is to be attributed to a drop in weight with age, at least after 65, or to the circumstance that a certain selection took place through the earlier death

Table 27. Weight (in kg.); by sex and age groups

Tabel 27. Gewicht (in kg.); per geslacht en leeftijdsgroep

Ages Leeftijd	With clothes Met kleren			Without clothes Zonder kleren		
	Mean weight Gemiddeld gewicht	Sx	Number of persons Aantal personen	Mean weight Gemiddeld gewicht	Sx	Number of persons Aantal personen
Men/Mannen						
65-69	72.4	11.2	159	70.6	10.8	188
70-74	71.5	10.2	189	67.8	11.0	212
75-79	70.6	10.9	206	68.6	10.2	196
80-84	69.2	10.8	154	65.4	11.2	129
85 +	70.2	9.4	59	65.6	11.6	67
Women Vrouwen						
65-69	69.4	11.6	188	68.8	11.0	152
70-74	65.9	11.6	213	65.6	12.0	169
75-79	65.0	11.2	218	62.6	11.2	145
80-84	61.8	10.8	148	61.4	11.7	103
85 +	61.7	13.4	86	59.8	14.0	46

of persons who were on the average heavier, or to a combination of both factors, certainly cannot be determined from these data. To do so would require longitudinal investigations.

Comparison may be made with a rather recent investigation done by Bøe, Humerfelt, and Wedervang.[22] They measured the weight, height, and blood pressure of almost the entire adult population of the Norwegian city of Bergen. The mean weight of men in the age groups 65-69, 70-74, and 75 and over was, according to these authors, 73.4, 73.7, and 70.4 kg. (standard deviations 11.0, 11.6, and 10.7 kg.) respectively. The mean for women was 67.8, 66.5, and 62.5 kg. (standard deviations 12.9, 12.4, and 10.5) respectively. The Norwegian aged, therefore, are probably somewhat heavier than those in The Netherlands.

Hobson and Pemberton[23] in their medical study of 476 aged in Sheffield, England, found a mean weight for the age groups 65-69, 70-74, 75-79, and 80 and over for men of 62.9, 63.5, 63.5, and 63.5 kg. and for women 59.1, 56.5, 57.8, and 55.9 kg. respectively. In spite of the fact

[22] Bøe, J., S. Humerfelt, F. Wedervang; The blood pressure in a population. Acta med. Scand. 1957, 157 supp. 321, Bergen.

[23] Hobson, W., J. Pemberton; The health of the elderly at home; Butterworth, London 1955.

that the English subjects were weighed in their indoor clothing, these values were appreciably lower than those found in The Netherlands. This is not surprising, since the English are in general smaller and more slender than the Dutch.

HEIGHT

Paralleling the drop in weight in the successive age groups there was also a distinct decrease in the mean height. For the men this went (see

Table 28. Height (in cm); by sex and age groups

Tabel 28. Lengte (in cm); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean height Gemiddelde lengte	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	168.9	6.6	348
70-74	168.3	7.0	404
75-79	167.4	7.3	407
80-84	165.8	7.5	294
85 +	165.6	7.6	132
Women/Vrouwen			
65-69	158.0	6.8	346
70-74	156.6	7.0	388
75-79	155.7	7.4	377
80-84	154.1	7.4	258
85 +	153.8	8.7	140

Table 28) from 168.9 cm. to 165.6 cm. and for women from 158.0 cm. to 153.8 cm. (with a standard deviation which was consistently about 7 cm.). The women were almost always more than 11 cm. shorter than the men. For men the figure for the weight in kilograms (without clothes) was about the same as the number of centimeters of height over 1 meter. For the women this possible relationship could not be distinguished. This is important because many physicians apply this rule for the normal relationship of weight to height to women as well as to men. It can of course be asked whether in The Netherlands the average elderly man has a normal weight and the average woman is too heavy. It can also be asked in this case whether this decrease in height is the result of selection or aging or both.

In the Norwegian study to which I have referred, the mean height

of the aged men of 65-69, 70-74, and 75 and over was 168.9, 169.0, and 167.8 cm. (with a standard deviation of 6.0, 6.3, and 5.6 cm.). For women the equivalent means were 156.6, 156.4, and 155.2 cm. (with a standard deviation of 6.3, 5.9, and 6.7 cm.). There is therefore little difference between the Norwegian and Dutch aged with respect to height.

SITTING HEIGHT

In agreement with the decrease in height in the successive age groups, the sitting height in the older groups is in general consistently smaller, as can be seen from Table 29. The reduction was for men from 86.3 cm. to 83.4 cm. (in the 80-84 group even to 82.6 cm.) and for women from

Table 29. Sitting height (in cm); by sex and age groups
Tabel 29. Zithoogte (in cm); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean sitting height Gemiddelde zithoogte	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	86.3	5.9	340
70-74	84.8	7.1	393
75-79	84.4	6.4	396
80-84	82.6	6.9	278
85 +	83.4	6.7	126
Women/Vrouwen			
65-69	80.9	6.3	333
70-74	79.7	6.2	375
75-79	78.8	6.0	364
80-84	76.9	6.5	243
85 +	76.3	7.0	137

80.9 to 76.3 cm. The standard deviation was consistently ± 6-7 cm. The sitting height of the women is of course always less than that of the men, by 5-7 cm. A sitting height of 75 cm. or less was found in the successive age groups for 4, 7, 6, 12, and 10% of the men and of 70 cm. or less for 4, 6, 5, 12, and 13% of the women.

CHEST CIRCUMFERENCE AT EXPIRATION

In agreement with expectation, Table 30 (page 102) also shows a clear-cut decrease in the pertinent mean values in the successive groups, for men from

Table 30. Chest circumference, expiration (in cm); by sex and age groups
Tabel 30. Borstomtrek na uitademing (in cm); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean circumference Gemiddelde omvang	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	93.6	7.3	349
70-74	92.4	7.2	403
75-79	92.8	7.5	408
80-84	91.8	8.1	289
85 +	90.6	8.3	134
Women/Vrouwen			
65-69	91.4	9.3	341
70-74	89.8	9.6	385
75-79	88.4	9.4	374
80-84	86.2	10.0	260
85 +	85.8	10.0	143

93.6 cm. in the youngest to 90.6 cm. in the oldest, and for women from 91.4 cm. to 85.8 cm. (with standard deviations of 7-10 cm.). As in the previous results, this does not necessarily mean that aging is the (only) cause of this effect. It may be that relatively more heavily built individuals had died than the slightly built. The expiration chest circumference of the men is also naturally larger that that of the women.

CHEST EXPANSION

Chest expansion, measured as the difference in circumference between inspiration and expiration, is also smaller the older the group, as can be seen from Table 31.

For men of 65-69 years, the mean difference was 4.8 cm. but for men of 85 and over it was only 3.9 cm. For women these figures were 4.1 and 3.5 respectively. The standard deviation for men was 1.6-1.9 cm., for women 1.4-1.8 cm. The women thus showed a smaller chest expansion than the men.

PULSE RATE

In contrast to the results reported thus far, there was no significant relationship between age and pulse rate. It will therefore be sufficient

Table 31. Difference in chest circumference between inspiration and expiration (in cm); by sex and age groups

Tabel 31. Verschil in borstomtrek bij in- en uitademing (in cm); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean difference Gemiddeld verschil	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	4.8	1.9	349
70-74	4.7	1.9	404
75-79	4.4	1.7	308
80-84	4.2	1.7	289
85 +	3.9	1.6	134
Women/Vrouwen			
65-69	4.1	1.8	341
70-74	4.0	1.6	385
75-79	3.8	1.6	375
80-84	3.5	1.4	258
85 +	3.5	1.5	143

to report here that the average pulse rate for 1599 men was 75 beats per minute with a standard deviation of 12, and for 1544 women, 81 with the same standard deviation of 12.

The average pulse rate for women was significently higher than for men. This was also found by Admiraal [24] in a blood pressure study of 503 women and 372 men of 60 years and older, all of whom were registered in 1949-1950 with the Municipal Medical and Health Service in Amsterdam. The average pulse rate there was ± 81 for women and ± 75 for men, thus practically the same as in the T.N.O. study.

SYSTOLIC BLOOD PRESSURE

Table 32 (page 104) indicates that the mean systolic blood pressure of the men examined was progressively slightly higher in the successive age groups (with the exception of the oldest), going from 161 mm. Hg. to 168 (164 for men of 85 and over), with standard deviations of 25-28 mm. Hg., but that this effect was not found for the women. For the latter group the mean systolic blood pressure fluctuated between 177 and 184 mm.

[24] Admiraal, J.; De bloeddruk bij ouden van dagen (Blood pressure in the aged), Ned. Tijdschr. Geneesk. 1951, **14**, 1056-1069.

Table 32. Systolic blood pressure (in mm. Hg.); by sex and age groups
Tabel 32. Systolische bloeddruk (in mm Hg); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean syst. blood pressure Gemiddelde syst. bloeddruk	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	161	26	350
70-74	162	25	406
75-79	167	27	409
80-84	168	27	293
85 +	164	28	136
Women/Vrouwen			
65-69	177	32	348
70-74	180	27	392
75-79	179	29	381
80-84	177	32	270
85 +	184	33	151

Hg. and the standard deviations lay between 27 and 33 mm. Hg. The results also show that the women consistently had an appreciably higher mean systolic blood pressure than the men and that for both sexes this mean blood pressure was always above 160 and for women even above 175 mm. Hg. It may be that in many subjects the emotion caused by the examination will have raised the blood pressure somehwat, but on the basis of the data shown here it is not so likely that, at least for the women, this average systolic pressure would in the absence of emotion drop to the neighbourhood of 150 mm. Hg.

An unmistakable high systolic blood pressure of 200 mm. Hg. or more was found for men in the successive age groups in 7%, 6%, 13%, 12%, and 10%, and for women in 23%, 23%, 21%, 23%, and 25%. Thus about a quarter of the women examined had a definite systolic hypertension. Only for the group of men did age perhaps play a small role; relatively more persons of over 75 years had this systolic hypertension than below that age.

Calculation of the mean systolic values for persons whose physical condition was rated as good by the investigator and in whom examination had shown no distinct abnormalities of heart and major blood vessels, showed the mean systolic pressure in successive age groups to be: for men 155, 157, 161, 163, and 154 mm. Hg. and for women 169, 173, 170,

175, and 179 mm. Hg. These means were therefore consistently somewhat lower than those of all the aged (with and without abnormalities) together, in the various age groups. With increasing age it can then also be said that there is a slight increase in systolic blood pressure for both sexes.

DIASTOLIC BLOOD PRESSURE

Table 33. Diastolic blood pressure (in mm. Hg.); by sex and age groups
Tabel 33. Diastolische bloeddruk (in mm Hg); per geslacht en leeftijdsgroep

Ages Leeftijd	Mean diast. blood pressure Gemiddelde diast. bloeddruk	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	94	15	350
70-74	93	15	406
75-79	94	16	408
80-84	94	16	292
85 +	93	18	136
Women/Vrouwen			
65-69	99	18	348
70-74	101	17	392
75-79	98	18	381
80-84	96	19	270
85 +	101	18	151

For both men and women (for the latter with the exception of those who belonged to the age groups of 70-74 years and 85 and over), as can be seen from Table 33, the mean diastolic blood pressure was consistently lower than 100 mm. Hg. For men the mean diastolic pressure was about 94 mm. Hg.(with a standard deviation of about 16 mm. Hg.), for women there was some disparity among the age groups, i.c. from 96 to 101 mm. Hg. (with a standard deviation of about 18 mm. Hg.). Women thus also had a higher average diastolic blood pressure than men. Neither sex showed much of an effect from age, at the most there was a tendency among women in the older groups (75-84) towards a somewhat lower mean diastolic pressure than in the younger groups (65-74).

Here too calculation was made for the mean diastolic pressure of persons with an objectively judged good health condition and in whom the present study had uncovered no distinct disturbances of the heart or

Table 34a. Systolic blood pressure in "healthy" old people in various countries; by sex and age groups

Tabel 34a. Systolische bloeddruk bij "gezonde" bejaarden in verschillende landen; per geslacht en leeftijdsgroep

Ages Leeftijd	The Netherlands T.N.O.-survey Nederland T.N.O.-onderzoek [1]	The Netherlands Nederland Admiraal [2]	Norway Noorwegen Bøe, Humerfelt,[3] Wedervang	England Engeland Hobson, Pemberton	England Engeland Hamilton, Pickering etc.	Scotland Schotland Anderson, Cowan	United States Ver. Staten Master, Lasser, Jaffe	United States Ver. Staten Russek, Rath, Zohman, Miller	United States Ver. Staten Miller
Men Mannen									
60-64	– (–)	170 (154)	– (–)	–	154	151	–	148	142
65-69	155 (161)	160 (142)	164 (152)	157	152	154	143	154	146
70-74	157 (162)	165 (147)	166 (157)	167	161	164	145	155	148
75-79	161 (167)	160 (137)			150	168	146	161	154
80-84	163 (168)	182 (158)			175	171	145	160	154
85-89	154 (164)	199 (163)	170 (158)	173	–	173	145	164	157
90 +		– (–)			–	–	145		–
Women Vrouwen									
60-64	– (–)	180 (158)	– (–)	173	159	158	–	–	156
65-69	169 (177)	188 (166)	176 (164)	178	173	163	154	–	174
70-74	173 (180)	199 (172)	180 (165)	178	175	168	159	–	161
75-79	170 (179)	201 (175)			177	179	158	–	165
80-84	175 (177)	212 (186)			198	187	157	–	176
85-89	179 (184)	195 (175)	183 (168)	186	–	184	154	–	145
90+		175 (150)			–	–	150	–	158

[1] (---) = mean values for all subjects/gemiddelde waarden voor alle onderzochte bejaarden.

[2] (---) = mean values of the "residual pressure"; the left hand column concerns the "maximal tension" (only 3 men and 6 women over 84 years of age were examined)/gemiddelde waarden van de „tension résiduelle"; de linkerkolom betreft de "tension maxima" (boven de leeftijd van 84 jaar werden slechts 3 mannen en 6 vrouwen onderzocht).

[3] (---) = mean values of a second group of subjects/gemiddelde waarden van een tweede groep onderzochte personen.

Table 34b. Diastolic blood pressure in "healthy" old people in various countries; by sex and age groups

Tabel 34b. Diastolische bloeddruk bij "gezonde" bejaarden in verschillende landen; per geslacht en leeftijdsgroep

Ages Leeftijd	The Netherlands Nederland T.N.O.-survey T.N.O.-onderzoek [1]	The Netherlands Nederland Admiraal [2]	Norway Noorwegen Bøe, Humerfelt [3], Wedervang	England Engeland Hobson, Pemberton	England Engeland Hamilton, Pickering, etc.	Scotland Schotland Anderson, Cowan	United States Ver. Staten Master, Lasser, Jaffe	United States Ver. Staten Russek, Rath, Zohman, Miller	United States Ver. Staten Miller
Men Mannen									
60-64	– –	93 (90)	– –	–	88	85	–	88	86
65-69	89 (94)	88 (84)	89 (92)	90	85	85	83	89	84
70-74	90 (93)	89 (84)	88 (92)	93	87	86	82	87	84
75-79	89 (94)	89 (84)			83	86	81	88	84
80-84	87 (94)	88 (82)	87 (91)	92	91	88	82	87	85
85-89	85 (93)	96 (83)			–	87	79	90	86
90 +		– –			–	–	78		–
Women Vrouwen									
60-64	– –	101 (91)	– –	98	92	86	–	–	84
65-69	94 (99)	97 (91)	92 (96)	100	94	86	85	–	93
70-74	95 (101)	99 (91)	92 (94)	99	93	87	85	–	88
75-79	91 (98)	97 (88)			97	88	84	–	90
80-84	92 (96)	97 (91)	91 (94)	100	97	89	83	–	94
85-89	96 (101)	81 (80)			–	92	82	–	83
90 +		95 (85)			–	–	79	–	75

[1] (---) = mean values for all subjects/gemiddelde waarden voor alle onderzochte bejaarden.

[2] (---) = mean values of the "residual pressure"; the left hand column concerns the "maximal tension" (only 3 men and 6 women over 84 years of age were examined)/gemiddelde waarden van de „tension résiduelle"; de linkerkolom betreft de „tension maxima" (boven de leeftijd van 84 jaar werden slechts 3 mannen en 6 vrouwen onderzocht).

[3] (---) = mean values of a second group of subjects/gemiddelde waarden van een tweede groep onderzochte personen.

major blood vessels. The mean diastolic pressure for the successive groups was, for men 89, 90, 89, 87, and 85, and for women 94, 95, 91, 92, and 96 mm. Hg. These values are once again somewhat lower than when the mean of all the aged together (with and without abnormalities) is taken per age group. In this case also there is no sign of an age effect, at the most it can be said that there is a somewhat lower diastolic blood pressure in the older groups.

A comparison of these values with those obtained by Master [25] (see Tables 34a and 34b, page 106 and 107) from an inquiry among a large number (± 5000) of physicians in the United States, concerning the blood pressure of apparently healthy persons, indicates that in The Netherlands the values lie somewhat higher. In the United States study the systolic blood pressure of 2998 men of 65 to 106 years lay between 143 and 146 mm. Hg. (average 145), with a standard deviation of 22-28, and for 2759 women of 65-106 years, between 150 and 159 mm. Hg. (average 156) with a standard deviation of 24-29. The average diastolic value for men in the successive age groups (separated by 5 years), dropped from 83 to 78 mm. Hg. (standard deviation 10-15) and for women from 85 to 79 mm. Hg. (81 for women from 95 to 106 years). The averages for all men and women examined in that study were 82 and 84 mm. Hg. respectively. On the basis of these data alone it cannot, of course, be concluded that in the United States blood pressure is on the average lower than in The Netherlands. Among other things, differences in apparatus and methods of measurement may have had an important effect.

A better comparison may be possible with the results of the investigation made by Bøe, Humerfelt, and Wedervang. The blood pressure values found by them for aged subjects are summarized in Table 35. They were unable to provide any explanation of the many differences which they observed between group I (studied in 1950 in the northern section of the city of Bergen) and group II (studied in the southern part of the same city in 1951). The Dutch and the Norwegian values do not seem to differ much, especially where the values for the Dutch "healthy" aged are concerned. In Norway, more or less healthy persons were studied.

The results of blood pressure measurements in the study done by Hobson and Pemberton also agree rather nicely with those of the Dutch study. The average systolic tension for men in the groups of 65-69 years, 70-74 years, and 75 and older was 157, 167, and 173 mm. Hg.

[25] Master, A. B., R. P. Lasser and H. L. Jaffe; Blood pressure in white people over 65 years of age. Geriatrics 1958, 13/12, 795-801, see also Ann. Intern. Med. 1958, 48, 284-299.

Table 35. Blood pressure of aged people in Bergen, Norway [1]

Tabel 35. Bloeddruk bij bejaarden in Bergen, Noorwegen [1]

Ages Leeftijd	Group Groep	Mean syst. blood pressure Gem. syst. bloeddruk	Sx	Mean diast. blood pressure Gemiddelde diast. bloeddruk	Sx
Men/Mannen					
65-69	I	164	29	89	15
70-74		166	28	88	14
75 +		170	29	87	14
65-69	II	152	26	91	17
70-74		157	26	92	19
75 +		158	25	92	19
Women/Vrouwen					
65-69	I	176	30	92	15
70-74		180	31	92	15
75 +		183	30	91	15
65-69	II	164	28	96	19
70-74		165	27	94	18
75 +		168	30	94	20

[1] Bøe, J., S. Humerfelt, F. Wedervang; The blood pressure in a population. Acta med. Scand. 1957, 157, Suppl. 321, Bergen.

respectively, and for women 178, 178, and 186 mm. Hg. respectively. The diastolic values were for men 90, 93, and 92, and for women 100, 99, and 100 mm. Hg. respectively.

Hamilton *et al.*,[26] in an English study of 827 men and 1204 women between 10 and 85 years who visited their out-patient department and who had no disease which pointed to blood pressure disturbances, found that 46, 27, 4 and 5 men in the age groups 65-69, 70-74, 75-79, and 80-84 had a mean systolic blood pressure of 152, 161, 150, and 175 mm. Hg. respectively, and the mean diastolic blood pressure was 85, 87, 83, and 91 mm. Hg. in the same order. For 74, 60, 26, and 11 women these systolic values in the successive age groups were 173, 175, 177, and 198 mm. Hg., and the diastolic values were 94, 93, 97, and 97 mm. Hg. These values, which are based on examination of only a small number of aged, show equally little important differences from the Dutch values.

The mean systolic blood pressure of 306 men and 240 women between

[26] Hamilton, M., G. W. Pickering, J. A. F. Roberts and G. S. C. Sowry; The aetiology of essential hypertension. 1. The arterial pressure in the general population. Clin. Sci. 1954, 13, 11.

the ages of 60 and 89 in Scotland whom extensive examination showed to be healthy was, according to Anderson and Cowan [27], in the successive age groups above 65: 154, 164, 168, 171, and 173 mm. Hg. and 163, 168, 179, 187, and 184 mm. Hg. The diastolic values for men were 85, 86, 86, 88, and 87, and for women 86, 87, 88, 89, and 92. They therefore concluded that there was a rise in blood pressure, especially the systolic, with age. In agreement with all other investigators, they also found that aged women showed on the average higher values than aged men. For the sake of completeness, it may be mentioned that on the basis of other investigations these authors concluded that the rise in blood pressure in 100 men was related to the degree of adiposity, but hardly at all to the presence of varices [28]. Concerning the former, the reader is referred to Chapter VII.

Table 34a and 34b also show the mean blood pressure values for 2277 men between 60 and 95 found by Russek, Rath, Zohman, and Miller [29] in an investigation of 5331 men of 40 to 95, from the white population of the United States. These were in general healthy individuals, although the authors reported that some of the elderly were incapacitated by the infirmities of age.

The results of blood pressure studies made by Miller [30] of the residents of the New York City Farm Colony are also given. Of the 853 men and 128 women between 50 and 94 years of age who were examined, there were only a very few in the oldest groups (12 and 0 men of 85-89 and 90-94, and 9, 9, and 6 women in the 80-84, 85-89, and 90 and older groups).

It can also be mentioned that in his investigation previously referred to, Admiraal also found that with increasing age the mean systolic pressure increased and the mean diastolic pressure remained the same or perhaps dropped slightly.

Thus these results indicate in general that at more advanced ages the mean systolic pressure increases and the average diastolic pressure increases either little or not at all and sometimes even drops. This phenomenon has long been familiar to clinicians. It is caused by progressive arteriosclerosis with loss of elasticity in the large vessels, in particular the aorta, so that the regulating function of this vessel is reduced and the

[27] Anderson, W. F. and N. R. Cowan; Arterial pressure in healthy older people. Clin.Sci. 1959, **18**, 103-117.
[28] Anderson, W. F. and N. R. Cowan; The influences of adiposity and varicose veins on arterial pressure in older women. Clin. Sci. 1959, **18**, 125-135.
[29] Russek, H. I., M. M. Rath, B. L. Zohman and I. Miller; The influence of age on blood pressure. Am. Heart J. 1946, **32**, 468-479.
[30] Miller, I.; Blood pressure studies in the aged. New York Med. J. 1941, **41**, 1631-35.

systolic pressure (and pulse pressure) increases. It should, however, be kept in mind that life expectancy drops with a rise in arterial pressure. According to Pickering,[31] this relationship is not linear, since the death rate increases more rapidly than the blood pressure. This means that with aging and in all probability before the ages between 60 and 70 there is a certain selection, so that relatively more persons with a low than with a high pressure remain alive. Pickering, for the rest, does not go very far into the changes in blood pressure with old age.

In concluding this section, the following may be cited from Pickering: "If secondary hypertension is excluded, there is no evidence that high pressure is qualitatively different from normal arterial pressure; the difference is not of kind but of degree."

RESPIRATION RATE

Table 36. Respiration rate per minute; by sex and age groups (in quartiles)
Tabel 36. Ademhalingsfrequentie per minuut; per geslacht en leeftijdsgroep (in kwartielen)

Ages Leeftijd	P 25	P 50	P 75	Number of persons Aantal personen
Men/Mannen				
65-69	15.7	17.8	20.1	347
70-74	15.9	17.6	20.2	403
75-79	16.1	18.3	20.5	408
80-84	16.2	18.4	21.7	292
85 +	17.7	19.6	22.7	138
Women/Vrouwen				
65-69	16.1	18.3	20.3	342
70-74	16.2	18.3	20.5	386
75-79	17.4	19.7	22.3	375
80-84	17.6	19.9	23.9	266
85 +	17.9	20.0	24.2	147

Table 36 shows that the mean respiration rate per minute in the successive age groups is consistently somewhat higher. Of the group of men from 65-69, the quarter which showed the lowest rates had an average of 15.7 respirations per minute, but of the group of men of 75 and over, this quarter had a mean frequency of 17.7 respirations per minute. For women the figures were 16.1 and 17.9, or slightly higher than for the men. Half of the men had a mean rate of 17.8 per minute in the youngest

[31] Pickering, G. W.; High blood pressure. J. A. Churchill Ltd., London 1955.

group and 19.6 in the oldest group and half of the women had in the same groups a mean rate of 18.3 and 20.0 respectively. Lastly, a quarter of the men in the same groups had rates of 20.1 and 22.7 and a quarter of the women 20.3 and 24.2, respectively. Thus in general the mean respiration rate of the aged certainly cannot be said to be especially low.

HAEMOGLOBIN CONTENT

Haemoglobin was not determined for 69 men and 95 women. Of the remaining subjects in the successive age groups 15, 15, 20, 28 and 19% of the men and 26, 32, 33, 35, and 34% of the women had a haemoglobin content of 12 gram % or less. In view of the fact that examination of frequency distribution of the cumulative percentages of persons with 8, 9, 10, etc. gram % Hb plotted on arithmetic probability paper showed no striking deviation in the preponderantly straight-line frequency curves, only the mean and the standard deviation of the values found are given in Table 37.

Table 37. Haemoglobin content of the blood (in gram %) [1]; by sex and age groups
Tabel 37. Hemoglobinegehalte van het bloed (in gram %) [1]; per geslacht en leeftijdsgroep

Ages Leeftijd	Mean Hb-values Gemiddelde Hb-waarde	Sx	Number of persons Aantal personen
Men/Mannen			
65-69	13.9	1.55	334
70-74	13.5	1.50	390
75-79	13.8	1.50	400
80-84	13.3	1.30	280
85 +	13.3	1.00	130
Women/Vrouwen			
65-69	12.8	1.65	328
70-74	12.8	1.65	374
75-79	12.6	1.60	363
80-84	12.6	1.75	249
85 +	12.6	1.50	137

[1] 100% = 16 g/100 ml.

From this Table it can be seen that the Hb content of the blood of aged women is lower than that of aged men, and that age, at least above the age of 65, has little effect on this content. Hobson and Pemberton found

for 177 men an average Hb content of 14.4 gram per 100 ml. and a frequency distribution of 10.8-17.9 gr.%; and for 247 women an average Hb content of 13.8 with a spread of 10.6-16.7. (They, however, set 100% haemoglobin equal to 14.7 gr.%.) On the basis of their data, they were, nevertheless, able to determine a significant drop with age in the values for men of 65.5 to 77.5 years and for women of 60.5 to 74.5 years. The difference between men and women was significant.

There is again, of course, the possibility that selection has operated in the sense that persons with low haemoglobin content would in general die sooner than persons with high values. As is also known from several other studies, however, these and the following data indicate that rather many aged are more or less anaemic. Further investigation into the causes of this fact is desirable.

Of the men in the present study, 0.5%, 0.8%, 2%, 5%, 11%, 19%, 22%, 21%, 13%, and 5% had a Hb content of 8 gr. %, 9 gr. %, etc. to 17 gr. % or higher, respecively. For the women these percentages were 1, 1, 3, 9, 18, 24, 21, 15, 6, and 2.

In order to get an idea of the reliability of the haemoglobin determination, the results of six Rotterdam general practitioners who had all had these measurements done in the Central Laboratory of that city were compared with those of the other general practitioners, for the number of those aged whose Hb content was 12 gr.% or lower and the number of aged whose content was 13 gr.% or higher. The differences between the observed and the expected numbers were rather small, so that it may be inferred that the Hb determinations which most of the physicians had done themselves or had had done for them in their own offices did not deviate greatly from those which were done in a single laboratory, and thus as a whole do not indicate much unreliability. Besides, the methods used by the physicians did differ somewhat.

When the Hb determinations done by the physician who had examined 141 subjects were compared with the other data, it then appeared that these did indeed deviate somewhat from the values of the other two groups of subjects, in the sense that there were noticeably fewer subjects with anaemia (Hb $<$ 12%) in his group than were to be expected on the basis of the other data. One explanation of this might be that this case involved a rural practice in the north of the country, in which nutritional and other conditions perhaps were somewhat less favourable for anaemia than those of the entire group of subjects.

A sedimentation rate higher than 15 mm. after the first hour was found for 14, 12, 21, 27, and 33% of the men in the successive age groups and for 27, 32, 30, 37, and 33% of the women. This indicates that a rather high percentage of the aged subjects had a high rate of red blood corpuscle sedimentation. Only careful study can determine whether this is to be ascribed to pathological processes or whether some other causes are responsible. Several physicians had those subjects with a high sedimentation rate given a thorough examination by an internist, but no specific cause could be found. It is therefore a matter of question whether a high sedimentation rate in the aged is always an indication of a disease process.

Dencker and Felbo [32] in 1954-1955 determined the sedimentation rate in 857 persons who formed 88% of the men and women of 65 and of 70 years living on the island of Bornholm. After one hour this was: for men an average of 13 mm. and for women 21 mm. A B.S.E. of more than 20 mm. after the first hour was found for 12 and 16% of the men of 65 and 70 years respectively, and 38 and 40 % of the women of these ages. Thus these authors too frequently found a high sedimentation rate.

The same thing has been found in mass examinations of other age groups. It does, however, seem as if the results for the very oldest group of men are higher than is usual at youthful and middle ages. The scope of the present study did not permit further analysis of this phenomenon, but the subject is discussed again on page 214 in relation to the role played by anaemia.

[32] Dencker, F. and M. Felbo; Saenkningsreaktionen hos aeldre (Sedimentation rate in the aged). Nord. Med. 1958, 27, 976-977.

CHAPTER V

RESULTS OF THE GENERAL PHYSICAL EXAMINATION

THE GENERAL IMPRESSION

As shown in Table 38, the physicians found the subjects' physical condition worse in almost every successive older group. In the youngest group of men, 18% made a less favourable ("not so good") impression, in the oldest group this figure was not less than 42%. For women these per-

Table 38. Physical condition according to the general practitioner; by sex and age groups; percentages

Tabel 38. Lichamelijke toestand volgens de huisarts; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Men/Mannen					Women/Vrouwen				
	Evaluation/Kwalificatie			Total Totaal		Evaluation/Kwalificatie			Total Totaal	
	Good Goed	Not so good Matig	Bad Slecht	%	abs.	Good Goed	Not so good Matig	Bad Slecht	%	abs.
65-69	82.0	15.7	2.3	100	350	75.2	23.9	0.9	100	347
70-74	81.3	18.0	0.7	100	406	65.0	32.4	2.6	100	392
75-79	70.4	26.2	3.4	100	408	55.1	39.1	5.8	100	379
80-84	64.1	32.5	3.4	100	295	49.8	41.7	8.5	100	271
85 +	57.7	37.2	5.1	100	137	51.3	42.8	5.9	100	152
Total Totaal	73.5	23.9	2.6	100	1596	60.9	34.8	4.3	100	1541

centages were 25 and 49. In each age group the percentage of men whose physical condition was considered good was larger than that of the women. Between 70 and 85 years, the differences are even significant. The difference between the sexes was present for both the physicians' impression and the subjects' own judgement of their health. It is therefore the more remarkable that the men, who made a better impression and who, as reported, had fewer complaints, nevertheless have a higher

death rate. There was also, in general, a divergence between the subject's opinion of his own health and that of the physician of his condition. Here, needless to say, age plays an important part. Whereas the subject's judgement, particularly in the case of the women of 65 to 75, was less favourable than that of the physicians, in the following age groups the reverse was the case. A possible explanation of this is the inability with increasing age of the individual to judge his condition objectively. This inability is perhaps connected with the euphoria which is especially rather frequent in very old people, and a tendency to boast about their good health. In addition, many aged as they get older appear to increasingly adjust themselves and accept a poorer state of health as "normal" for their age. It was also striking that the percentages of those whose physical condition was given as "bad" (men 0.7-5%, women 0.9-9%) were so low.

ORTHOPAEDIC ABNORMALITIES [33]

Abnormalities of the trunk, limbs, or joints had a high frequency: 46-61% of the men and 51-68% of the women, and with increasing age the figures were higher (see Table XIV). Among the men, appreciably more individuals in the oldest group had these abnormalities than did those in the youngest group. Although they were found less often (in some age groups even significantly less) for men than for women, the most frequently observed types of abnormality, i.e. the minor abnormalities of the trunk (which were nevertheless considered as the "principal" condition when other non-serious abnormalities were also present) occurred consistently the most for the men: 24-33% of the men and 18-26% of the women examined. These abnormalities were especially prevalent among the older people. Second place among the men was taken by minor abnormalities of the limbs (7-9%, increasing slightly with age) and minor chronic joint conditions (5-9%, also increasing somewhat in frequency at advanced age). For women these last abnormalities took second place (10-12%), followed by the minor abnormalities of the limbs (6-12%). Serious orthopaedic abnormalities were found in 6-9% of the men and 8-18% of the women. These figures show how important a factor the condition of the skeleton and joints is for the health and wellbeing of the aged, and especially the women among them. Their effect on whether or not the individual could cook, do errands,

[33] When abnormalities are mentioned here and in the following paragraphs, it is understood that when multiple abnormalities are simultaneously present, the one mentioned by the investigators as the principal abnormality, "the one which is most manifest" is taken.

wash and dress, use stairs – in other words maintain himself independently, has already been pointed out.

Using the information further supplied by the physicians concerning this group of abnormalities, an attempt was made to get an idea of the nature and frequency of the principle serious and "other" conditions of the trunk and limbs. Because in a number of cases a choice had to be made between two or more conditions considered very important and because additional data were not always available, only a rather limited value can be attached to the following results.

As far as the serious abnormalities of the trunk are concerned, among 45 men there were 20 cases of kyphoscoliosis (4, 5, 6, 5, and 0 cases in the successive age groups) and 25 cases of kyphosis (5, 4, 4, 10, and 2 cases); for 82 women: 44 cases of kyphoscoliosis (8, 9, 10, 10, and 7 cases), 30 cases of kyphosis (0, 7, 12, 7, and 4), 2 cases of very severe lordosis, 1 case of Bechterew's disease, 2 cases of "stiffening of the spinal column" without further particulars, and 3 conditions without further details. Of the 36 serious affections of the limbs among men, there were included: foot deformities 12 (flat feet 6, *pes equino-varus* 2, *halluces valgi* 2), amputations 6, contractures, ankyloses 3, fracture of the *collum femoris* or the after-effects thereof 3, dislocation of the hip 2, shortening of the leg 2, others 8. For 46 women there were found, among other things: deformations of the foot 19 (among them *halluces valgi* 8, *pedes plani* 8, *pes equino-varus* 2), contractures, ankyloses 8, fractures of the *collum femoris* and their after-effects 7, amputations 2, dislocation of the hip 1, leg shortening 1.

There were also reports of 29 cases of severe arthrosis deformans (7, 9, 8, 2, and 3 cases in the successive age groups), 8 cases of "stiffening of the joints", and 4 cases of "chronic rheumatic affections" among the men. For women the figures were 62 (8, 13, 17, 14, and 10), 7, and 21.

These figures show once again what an important role chronic joint and bone affections play at the advanced ages.

ABNORMALITIES OF THE SKIN, LYMPH GLANDS, THYROID, AND MAMMAE

Among both the men and the women, 26-38% showed one or more of these affections. For men the number rose somewhat with age, for women there was no distinct age effect. Minor skin affections formed the most frequent (coded as "principal") conditions. They were found in 23-31% of the men and 19-26% of the women, increasing somewhat in

frequency with increasing age. This result agrees with the observation that senile skin has often undergone changes (atrophy, pigmentation, warts, etc.) and is therefore more susceptible. Serious skin conditions – as principal abnormality – were found in only 0.5-4% of the men and 1-3% of the women. The percentages are the same or even lower for the other three kinds of abnormalities. Serious mammary abnormalities were found in 0.7-4% of the women, non-serious mammary abnormalities in 9 men and 11 women. There were practically no thyroid abnormalities found among the men (only 4 cases of minor importance), and somewhat more among the women: for the first three age groups 9, 9, and 8 subjects with light cases and 2, 1, and 4 severe cases, respectively.

Abnormalities of the lymph glands were on the contrary found somewhat more for men (21 minor abnormalities and 3 serious ones) than for women (11 minor and 1 serious case).

The data could to some extent be made somewhat more specific: among the 18 cases of serious skin conditions in men the investigators included: decubitus ulcer 3 (in a man of 83 with a contraction following a *collum femoris* fracture, one man of 90 with advanced arthrosis of the knees, and one man of 91 with a dextral *fractura colli femoris*), *ulcus cruris* 1 (in a man of 93), psoriasis 2 (in men of 66 and 67, the latter of whom also had a neurofibromatosis), angioma 1, 1 dubious case of beginning basal cell carcinoma on the right temple, 1 acne, 1 case with widespread skin infiltration near one of the buttocks, and (although their inclusion is not justified) a few cases of severe cyanosis. Among 30 women with serious skin abnormalities were noted, among others: *ulcus cruris* 9 (5 of which were in women over 80), skin cancer 5 (1 of the facial skin, 1 had had both auricles amputated, 1 röntgen ulcer around the navel, 1 probable *ulcus rodens* of the cheek, 1 case of healed cancroid on the temple), psoriasis 3, dermatitis 2, varicose eczema 1, tuberculid 1, multiple naevi 1, haemorrhagic naevus 1. The 3 cases of severe lymphatic gland conditions in men involved, among others, 1 man with a glandular mass on the right and left sides of the neck and 1 man whose inguinal glands had been removed; of the two remaining cases, 1 man and 1 woman, no further information was noted on the questionnaire.

Seven women were reported to have a serious abnormality related to the thyroid gland, which were; 1 nodose struma, which with exertion pressed on the trachea; 1 somewhat enlarged thyroid; 1 very large thyroid, also spreading retrosternally; 2 strumectomies; 2 cases without specific details.

In one man of 73 a severe hypertrophy of the mammae was established.

The 33 serious mammary conditions among the women were all probably connected with malign neoplasms (in 4 cases no specific details were noted). There were 23 reports of breast amputations (8, 3, 8, 4, and 0 cases in the successive age groups, of which 8 were further noted for the left side and 7 for the right; for 2 women metastases were reported), 2 of Paget's disease, one of a tumor in both right and left breast, one of a retracted nipple, and 2 of a carcinoma mammae. Whether there had been ablation in the last 2 cases was not reported. From these findings it appears that ± 2% of the women subjects had or had had in any case carcinoma of the breast and that ± 1½% of all these women had had surgical treatment.

TENDON REFLEXES

Abnormal patellar and/or Achilles tendon reflexes were found in 16-29% of the men and 10-31% of the women. With increasing age the percentage of those who had some form of abnormality of one or both reflexes was consistently greater. In men the increase was from 16 for the youngest to 29 for the oldest, and for women from 10 to 31. The Achilles tendon reflex showed on the average 2-4 times as many abnormalities as the patellar reflex. Abnormalities of the former reflex were also more frequently seen alone (8-12% for men and 6-15% for women) than in combination with abnormalities of the patellar reflex (5-15% for men, 2-12% for women).

PUPIL REACTIONS, SENSE OF BALANCE, TREMORS

Abnormalities related to one of these three were seen in 16-38% of the men and 12-35% of the women. The oldest groups had significantly more abnormalities than the younger. The most prevalent (coded as "principal") abnormalities were the non-serious tremors, which were present in 7-17% of the subjects, more at the older ages than the younger and in each age group more in men than women. About one in six men of 80 and over and one in six women of 85 and over was troubled by non-serious tremors. Serious tremors were rarely seen: in 27 men and 22 women. Non-serious abnormalities of the pupillary reactions were seen in 3-7% of the men and women, and non-serious disturbances of the sense of balance in 2-8% of men and women. Serious pupillary reaction abnormalities were found in 14 men and 24 women, and serious disturbances of the balance in only 6 men and 8 women.

MOUTH, NOSE, AND THROAT ABNORMALITIES

Of the entire group of subjects, 10-18% showed abnormalities of the lips, cheeks, tongue, senses of taste and smell, voice or speech. There was no difference of any importance between the sexes in the frequency of the separate abnormalities. The percentage of those who had complaints rose somewhat, although not significantly, with age. As principal abnormality especially mentioned were those of the sense of smell (in 69 men and 62 women) and of the tongue (51 men and 44 women). Next came abnormalities of the lips (25 men and 29 women), of speech (31 men and 19 women), nose (15 men and 9 women), cheeks (10 men and 13 women), voice (14 men, 7 women) and taste (4 men, 17 women). No age effect could be found.

In relation to the condition of the *teeth*, the situation was quite different (see Table 39). Only 65 men (with a percentage dropping from 7 to 2) and 27 women (3-0%) had their own teeth in reasonable condition. With increasing age a "not so good" set of teeth was seen in 8 to 2% of the men and 3 to 0% of the women. The older age groups had to an appreciable and continuously increasing degree their own teeth but in bad condition, in other words they used dentures relatively much less than the younger groups. The relevant percentages rose for men from 29 to 63 and for women from 16 to 53. These figures show very clearly that the dental condition of the elderly person frequently leaves much to be desired. It will therefore certainly be necessary to give more attention to geriatric dentistry than has been the case thus far.

For comparative purposes some of the data collected by investigators in other countries is summarized here. Sheldon found in an investigation in the English city of Wolverhampton among 143 men of 65 and over and 334 women of 60 and over that of the 436 individuals for whom there were data on this point, 40% of the men and 21% of the women used their own teeth for chewing. In addition, 14% of the men and 8% of the women had neither their own nor false teeth. A few years later, after the inauguration of the National Health Service, an investigation by Hobson and Pemberton indicated that of the 331 subjects (of whom a number of women belonged to the age group 60 to 65) there were 102, or 31%, who still had one or more of their own teeth.

Significantly more women than men had dentures. Sheldon as well as Hobson and Pemberton also observed this. Only a few more men than women had had a denture for 1 to 5 years, but the number of women who had had one for more than 15 years was more than twice as large as

Table 39. Condition of own teeth; extent and period of use of a denture; by sex and age groups; percentages

Tabel 39. Toestand eigen gebit; mate en duur van het gebruik van een prothese; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Own teeth (without any denture) Eigen gebit (zonder enig gebruik van een prothese)		Denture (in regular use) for: Prothese (geregeld gebruik) sinds:			Denture (not in regular use) for: Prothese (ongeregeld gebruik) sinds:	Total Totaal	
	Reasonable or not so good Redelijk of matig	Poor Slecht	1-5 years 1-5 jaar	5-15 years 5-15 jaar	> 15 years > 15 jaar	1-15 years and more 1-15 jaar en langer	%	abs.
Men Mannen								
65-69	14.8	29.4	12.5	25.4	12.8	5.1	100	351
70-74	11.4	35.8	10.3	21.4	17.2	3.9	100	406
75-79	9.0	54.4	5.1	13.7	15.4	2.4	100	410
80-84	4.1	66.1	2.7	10.5	12.9	3.7	100	295
85 +	3.7	63.3	2.9	6.6	16.2	7.3	100	136
Total Totaal	9.5	47.2	7.4	17.0	14.9	4.0	100	1598
Women Vrouwen								
65-69	6.1	16.4	9.2	23.3	36.1	8.9	100	348
70-74	6.8	25.2	5.3	18.6	36.0	8.1	100	393
75-79	4.1	32.8	4.2	12.6	38.7	7.6	100	381
80-84	3.8	43.7	0.7	8.5	35.2	8.1	100	270
85 +	–	52.7	1.3	8.0	28.7	9.3	100	150
Total Totaal	4.8	31.0	4.7	15.4	35.8	8.3	100	1542

that for men. Where only 65 men (more than 9% of all men with dentures) did not use their dentures all the time, this was the case for 128 women (of whom 84 had had a denture for more than 15 years) or nearly 13%. The difference is not significant, however.

ABNORMALITIES OF VISION

The study showed that vision difficulties had resulted in the use of eyeglasses by 79-91% of the men and 81-96% of the women (see Table 40).

Table 40. Use, period of use, and benefit from eyeglasses; by sex and age groups; percentages

Tabel 40. Gebruik, duur van het gebruik en nut van de bril; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No eyeglasses used Geen bril gebruikend	Eyeglasses for hypermetropia (presbyopia) for: Bril voor hypermetropie (presbyopie) sinds:			Eyeglasses for myopia for: Bril voor myopie sinds:			Total Totaal	
		benefit from eyeglasses baat bij bril		no benefit from eyeglasses geen baat bij bril	benefit from eyeglasses baat bij bril		no benefit from eyeglasses geen baat bij bril	%	abs.
		0-5 years ago 0-5 jaar geleden	> 5 years ago > 5 j. geleden		0-5 years ago 0-5 jaar geleden	> 5 years ago > 5 j. geleden			
Men/Mannen									
65-69	9.4	12.0	67.1	4.3	0.6	6.6	–	100	351
70-74	10.1	8.1	67.1	4.9	2.0	7.6	0.2	100	407
75-79	13.0	7.6	69.7	4.6	0.7	3.9	0.5	100	408
80-84	16.8	5.8	65.1	6.1	1.4	3.4	1.4	100	292
85 +	21.2	2.2	60.6	10.2	0.7	4.4	0.7	100	137
Total/Totaal	12.9	7.9	66.8	5.4	1.1	5.4	0.5	100	1595
Women Vrouwen									
65-69	4.0	11.2	71.6	4.9	0.9	6.3	1.1	100	348
70-74	7.1	9.4	68.7	6.4	1.5	5.1	1.8	100	392
75-79	6.8	5.3	71.8	7.1	1.6	5.8	1.6	100	380
80-84	9.6	6.3	67.8	10.7	–	5.2	0.4	100	271
85 +	19.1	3.9	61.8	9.9	0.7	2.6	2.0	100	152
Total/Totaal	8.0	7.7	69.4	7.3	1.0	5.3	1.3	100	1543

In actuality these percentages are probably slightly larger because it is likely that mistakes occurred in the filling in of these answers by a few investigators who thought it was unnecessary to note the use of reading glasses. In the Groningen study the same percentages were higher, and in Wolverhampton Sheldon even found that almost 94% of the aged subjects required glasses. Hobson and Pemberton reported that of 140 men and 184 women whom they examined, 92% and 94% had glasses. Of the few who had no glasses, almost all were found by further examination to need them. In a Swedish study [34] of 1064 persons of 67 and over, 95% had glasses.

In agreement with the results of the other studies mentioned was the finding that the women used glasses more than the men and that at more advanced ages the number of those who used them was relatively smaller (Hobson has no data on this point); in men the percentage of those who had no glasses rose from 9 to 21, in women from 4 to 19. This is a striking finding which requires further study. By far the largest proportion of glasses were used because of "hypermetropy" which of course usually meant presbyopy. More than 2/3rds of all subjects had used glasses for this condition for more than 5 years and found that they were helped. For the same reason glasses had been worn for less than 5 years by 126 men (of whom 42 were between 65 and 70) and 119 (39 in the same group) women, with satisfactory results. Ninety men and 117 women complained that their "far-sightedness" was not helped by their glasses. Rather few subjects had near-sightedness alone; 112 men and 119 women. Of these, 8 and 21 respectively were not helped by their glasses.

Further investigation (see Table 41, page 124) showed that 36 men and 46 women were blind or almost blind, or ± 2% of the men and 3% of the women (Sheldon: ± 1% practically blind; Hobson: 0.4% entirely blind and 2.5% almost blind; Swedish study: 2% of the men and 4% of the women entirely or almost blind). In the oldest group these percentages were 6 and 9 respectively. There was an appreciable amount of cataract, significantly more in women than men, and somewhat increasing with age (men: 5-18% of all those examined, women: 8-21% of all subjects). Sheldon found cataract in ± 6% of his subjects, Hobson, on the contrary, in 17% of the men and 15% of the women. Ectropion was seen in 27 men and 25 women, or 1.7% of the subjects (Hobson: 1.5%), xanthelasma in 10 men and 18 women, and a tumour in 1 man; "other eye abnormalities" were found in 106 men and 116 women. Appreciably more men than women had arcus senilis (19-33% of the men and only 11-21% of the

[34] Åldringsvård. Statens Offentliga Utredningar 1956: 1, Social departmentet, Stockholm, 1956.

Table 41. Kind of eye abnormalities exclusive of myopia or "hypermetropia"; by sex and age groups; percentages

Tabel 41. Aard van oogafwijkingen afgezien van bij- of "verziendheid"; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Nearly or totally blind Bijna of geheel blind	Ectropion	Xanthelasma	Cataract	Arcus senilis	Other abnormalities Andere afwijkingen	Totaal %	Total abs.
Men/Mannen									
65-69	67.7	2.0	–	0.6	4.6	19.4	5.7	100	351
70-74	58.6	1.0	–	0.7	6.4	25.9	7.4	100	406
75-79	50.4	2.2	1.2	1.0	10.0	28.6	6.6	100	409
80-84	37.6	2.7	3.1	0.3	16.0	33.1	7.2	100	293
85 +	29.2	5.8	9.5	–	18.2	30.8	6.5	100	137
Total/Totaal	52.1	2.3	1.7	0.6	9.7	26.9	6.7	100	1596
Women Vrouwen									
65-69	68.2	1.4	1.2	2.3	8.1	10.7	8.1	100	347
70-74	61.4	1.5	0.5	0.8	11.5	15.6	8.7	100	392
75-79	51.5	2.6	1.8	0.5	17.7	20.6	5.3	100	379
80-84	40.3	4.1	1.9	1.5	22.6	21.1	8.5	100	270
85 +	37.0	9.3	4.6	0.7	21.2	19.9	7.3	100	151
Total/Totaal	54.5	3.0	1.6	1.2	15.1	17.1	7.5	100	1539

women; Hobson: 29% of all subjects). There was markedly more of this condition in persons over 80 than among the 65 to 70 year old subjects.

HEARING ABNORMALITIES

The percentage of men with a "hearing disturbance" was in the successive groups 18, 26, 28, 37, and 41; for women these figures were 15, 14, 28, 33, and 46. In general, the men thus had somewhat more abnormalities than the women. The number of persons with hearing abnormalities increased markedly with age, as was to be expected.

In Sheldon's study, 14, 42, 46, 64, and 60% of the men and 15 (60-64 years), 18, 22, 43, 67, and 68% of the women reported themselves more or less bothered by hearing disturbances. Hobson and Pemberton found hearing distrubances for 39, 50, and 63% (75 and over group) of the men and 14 (60-64 years), 25, 37, and 47% of the women. Finally, Strøm [35] in a Norwegian socio-medical study of 587 men and 802 women of 70 and over, found that 17% and 41% of the men of 70-79 and 80 and over respectively and 8% and 29% of the women of the same age groups had trouble with hearing.

About 90% (for men dropping from 95 to 84%, for women from 97 to 76%) of all examinees, however, thought they had no need of a hearing aid. Only 28 men (2%) and 42 women (3%) used such an instrument, of whom 20 and 26 respectively only in the preceding 5 years. Five men and 14 women were not helped by it. Sixty-one men and 38 women had financial reasons for not acquiring one. Forty-one men and 41 women thought such an apparatus would not help them, of whom particularly the eldest were the most pessimistic. Finally, 27 men and 38 women had no hearing aid because of "other objections." The great difference between the compensation of a visual inadequacy with glasses and the overcoming of a hearing disturbance with the help of a hearing apparatus is striking.

CONDITION OF THE CIRCULATORY SYSTEM

Pulse qualities

The number of subjects with an irregular and/or unequal pulse increased with age; for men from 10 through 13 and 20 to 25%, for women from

[35] Strøm, A.; De eldres levekår og helsetilstand. Norske Gerontologiske Skrifter, no. 2. De Gamles Helsekomité, Oslo 1956.

12 through 15, 16, and 20 to 30%. The difference between the extreme age groups was significant. There was no noteworthy difference between the sexes. Both the percentage of those who had only a slightly unequal pulse and those who had a totally irregular, unequal pulse rose gradually with increasing age: from 8 through 10, 16, and 21 to 20% of the men and from 11 through 13, 12, 16, to 24% of the women: and in 2 through 3, 4, and 4 to 5% of the men and from 1 through 2, 3, 4, to 6% of the women respectively. In total, 55 men and 48 women had a totally irregular pulse.

Changes in peripheral blood vessels

The percentage of those who showed blood vessel changes was, as shown by Table XV, progressively larger in the successive age groups; the oldest groups (men 82%, women 80%) had significantly more abnormalities than the youngest (men 59%, women 47%). Up to the 80th year consistently significantly more men than women had these abnormalities. Changes in the *a.radialis* were the most frequently observed, i.e. in 46% of all men and 41% of all women. Where for both sexes the percentage of those in whom the radialis was palpable remained just about constant in each group: ± 25%, nevertheless with increasing age there was a continuous increase in the number of gyrate or distinctly hardened radialis. With the latter change, the percentage of men rose from 5 to 13 and that of women from 2 to 19. Changes in the *a.brachialis*, on the other hand, were found in only 16% of the men and 10% of the women. The total percentage of persons with these changes rose only a little with age, in contrast to the total percentage of persons with changes in the *a.radialis*. A distinctly hardened *a.brachialis* was found in 55 men and 29 women. The older the men were the relatively more absence of pulsation of the *a.tib.post.* and *a.dors.pedis* was found. The differences were not significant, however. Women did not show this age effect. Thirty-four and 66 men had no pulsation of the *a.tib.post.* and *a.dors.pedis*, respectively. For women these figures were 51 and 61. "Other blood vessel changes" were almost entirely absent, or at least not noted.

OEDEMAS, VARICES

As can be seen from Table 42, with increasing age the sexes show inverse changes in the percentages of those who had one or both abnormalities. For men there was an (otherwise not significant) rise from 25 to 33%,

Table 42. Oedema and/or varicosis; by sex and age groups; percentages
Tabel 42. Oedemen en/of varices; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No oedema and varicosis Geen oedemen en varices	Varicosis Varices	Oedema Oedemen	Oedema and varicosis Oedemen en varices	Total Totaal	
					%	abs.
Men/Mannen						
65-69	75.2	19.1	3.4	2.3	100	350
70-74	78.0	13.8	4.7	3.5	100	405
75-79	71.7	13.4	11.5	3.4	100	410
80-84	71.5	15.3	9.5	3.7	100	294
85 +	66.7	13.0	12.3	8.0	100	138
Total/Totaal	73.6	15.1	7.7	3.6	100	1597
Women Vrouwen						
65-69	46.8	34.8	8.9	9.5	100	348
70-74	51.4	25.7	13.0	9.9	100	393
75-79	53.4	20.7	13.1	12.8	100	382
80-84	52.1	21.9	16.7	9.3	100	269
85 +	56.6	14.5	21.7	7.2	100	152
Total/Totaal	51.5	24.7	13.6	10.2	100	1544

but for women an (equally non-significant) drop from 53 to 43%. There was a significant difference between the sexes in relation to the presence of oedemas and/or varices. In almost all age groups there were more varices, often to a significant degree, than oedema. While varices were, especially in women, less frequent with increasing age, the reverse held true for oedemas. Oedemas alone were found in 3-12% of the men and 9-22% of the women; varices alone in 13-19% of the men and 15-35% of the women. Felbo [36], investigating on the Danish island of Bornholm, found for 290 and 262 men of 65 and 70 years respectively, and 226 and 196 women of those ages, that 16 and 12% of the men and 29 and 39% of the women had varices.

Abnormalities of the heart

Examination of Table 43 (page 128) indicates that percussion of heart and large blood vessels showed more abnormalities in the oldest groups than

[36] Felbo, M.; Old age and work. Munksgaard, Kopenhagen 1958.

Table 43. Kind of deviations at percussion of the heart and the large vessels; by sex and age groups; percentages

Tabel 43. Aard der afwijkingen bij percussie van hart en grote bloedvaten; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No deviations Geen afwijkingen	Dubious or moderate enlargement Dubieuze of matige vergroting	Considerable enlargement Sterke vergroting	Both heart enlargement and dullness on breast bone Zowel hart-vergroting als demping op sternum	Total Totaal	
					%	abs.
Men/Mannen						
65-69	80.3	17.7	1.1	0.9	100	350
70-74	79.1	18.0	1.5	1.4	100	406
75-79	68.0	26.3	3.7	2.0	100	410
80-84	65.1	27.8	4.4	2.7	100	295
85 +	62.5	33.8	1.5	2.2	100	136
Total/Totaal	72.5	23.2	2.5	1.8	100	1597
Women Vrouwen						
65-69	69.1	27.4	2.6	0.9	100	347
70-74	67.5	29.2	2.3	1.0	100	390
75-79	59.3	33.6	5.8	1.3	100	381
80-84	55.9	34.3	5.3	4.5	100	265
85 +	52.0	42.0	2.0	4.0	100	150
Total/Totaal	62.4	32.0	3.7	1.9	100	1533

the youngest, and more in women than men. These differences are significant. A dubious or moderate enlargement of the outline of the heart was in that case the most frequent abnormality found. The percentages rise from 18 to 34 for men and from 27 to 42 for women. A very pronounced enlargement was seen in only 40 men and 57 women, and a dullness at the site of the sternum, whether or not coupled with a heart enlargement in the opposite direction, in still smaller numbers: 28 men and 30 women. It is self-evident that in considering these results the variations in the percussion technique of the investigating physicians must be kept in mind.

Auscultatory abnormalities were 6-10% less frequent than percussive abnormalities, as shown by comparison of Tables 43 and 44. For the

Table 44. Kind of deviations at auscultation of the heart and the large blood vessels; by sex and age groups; percentages

Tabel 44. Aard der afwijkingen bij auscultatie van hart en grote bloedvaten; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No cardiac murmur Geen souffle	Soft systolic cardiac murmur Zachte systolische souffle	Distinct systolic cardiac murmur Duidelijke systolische souffle	Diastolic cardiac murmur Diastolische souffle	Systolic and diastolic cardiac murmur Systolische en diastolische souffle	Total Totaal	
						%	abs.
Men Mannen							
65-69	85.9	8.3	3.7	0.9	1.2	100	351
70-74	85.2	9.4	4.2	0.5	0.7	100	406
75-79	76.2	16.8	4.6	1.5	0.9	100	410
80-84	72.4	17.6	7.1	1.3	1.6	100	295
85 +	73.0	13.9	12.4	–	0.7	100	137
Total Totaal	79.6	12.9	5.4	0.9	1.2	100	1599
Women Vrouwen							
65-69	78.0	15.3	6.1	0.3	0.3	100	347
70-74	73.9	17.5	6.2	0.8	1.6	100	388
75-79	68.8	17.5	11.3	1.0	1.4	100	382
80-84	66.5	20.3	10.2	0.4	2.6	100	266
85 +	62.5	21.3	12.7	1.4	2.1	100	150
Total Totaal	71.2	17.9	8.7	0.7	1.5	100	1533

rest, practically the same age and sex differences were established as with percussion. A soft systolic murmur was primarily found in 8-18% of the men and 15-21% of the women. Both the soft and the distinct systolic murmurs were found in more women than men.

Diastolic murmurs were found in only 15 men and 11 women and the simultaneous presence of diastolic and systolic murmurs was found in only 17 men and 22 women. Thus diastolic murmur was heard in only ± 2% of the men and women.

A symmetric, normally shaped thorax was seen in 62-74% of the men and 60-81% of the women. For the youngest group (men 74%, women 81%) this was significantly more the case than for the oldest group (men 62%, women 60%). The most frequent abnormality was a flattened thorax, more often found in women than men (only in the 75-79 year group was this difference significant, however). In the youngest group (men 5%, women 6%) this abnormality was again significantly less prevalent than in the oldest group (men 15%, women 18%). A sunken or barrel chest was, on the other hand, somewhat more frequent in men (6-9% and 10-11% respectively) than in women (3-12% and 5-8%). An asymetric thorax was found in 1 out of 16 of the subjects.

Some sort of *shortness of breath* was more frequent (significantly to 80 years) in women than men and was found in the oldest men twice and in the oldest women one and a half times as often as in the youngest men

Table 45. Dyspnea (at rest or with light or heavy exertion); by sex and age groups; percentages

Tabel 45. Dyspnoe (zonder resp. bij lichte of zware inspanning); per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No dyspnea Geen dyspnoe	With heavy exertion Bij zware inspanning	With light exertion Bij lichte inspanning	Without exertion Zonder inspanning	Total/Totaal	
					%	abs.
Men/Mannen						
65-69	66.2	2.3	14.9	16.6	100	350
70-74	63.0	3.0	15.3	18.7	100	406
75-79	49.8	3.9	25.1	21.2	100	410
80-84	39.3	5.1	32.9	22.7	100	295
85 +	33.8	4.4	35.3	26.5	100	136
Total/Totaal	53.4	3.6	22.7	20.3	100	1597
Women Vrouwen						
65-69	55.5	0.9	21.8	21.8	100	348
70-74	47.8	3.6	26.7	21.9	100	393
75-79	40.2	4.5	37.1	18.2	100	380
80-84	36.7	7.4	38.9	17.0	100	270
85 +	30.2	6.7	46.3	16.8	100	149
Total/Totaal	44.0	4.2	32.2	19.6	100	1540

and women (see Table 45). With increasing age, and especially in women, shortness of breath at light exertion played a progressively more important role. This last phenomenon, and the fact that women were more troubled by it than men, was also established by the Groningen study. Sheldon's investigation also found more women than men affected. In that study, however, only 12% of the men and 16% of the women complained of this condition. This difference probably depends largely, among other factors, on a difference in the use of the term "shortness of breath." Of the 1597 men there were 57 who had dyspnoea without any exertion, and of the 1540 women this held for 64.

More abnormalities were disclosed by percussion and auscultation of the lungs with increasing age; the percentages rose from 15 to 30 for men and from 11 to 22 for women. The former thus showed in general more abnormalities than the latter, although not significantly in most age groups. Percussion showed abnormalities in only a few cases: 38 men and 25 women. Auscultation, however, revealed a rather large number, with a distinct increase with increasing age: for men in the successive groups 9, 10, 17, 14, and 23%, for women 8, 8, 11, 18, and 19%. Abnormalities determined with both percussion and auscultation were found in total for 88 men (6% of the sample) and 45 women (3%).

ABDOMINAL AND SEX ORGANS

Abnormalities of the *abdominal wall* were found in about two fifths of the subjects examined, and somewhat more in men (35-47%) than in women (35-43%). The number increased somewhat with age in men only. Scars were seen in 15-22% of the men and 10-17% of the women, and in the younger groups somewhat more than in the older, perhaps a sign that more operations are done at present than formerly in all age groups. Hernia played a large part among the men: in the successive age groups they were found in 13-26% of the subjects, and in only 3-7% of the women (Hobson found a hernia in 39% of the men and 6% of the women). The latter, however, showed distinctly more a diastasis of the *mm.recti* (percentages of 12-18) than the men (1 to 4%). "Other" abnormalities of the abdominal wall were seen in only 30 men and 69 women.

Abnormalities of the *abdominal organs* were much less frequently found than those of the abdominal wall. Women led with a (gradually increasing with age) percentage of 15-23. For men these percentages were 9-16. In by far the most cases the abnormality was an enlarged liver: 7-11% of the men and 11-17% of the women. Enlargement of the liver

Table 46. Kind of abnormalities of the anus; by sex and age groups; percentages

Tabel 46. Aard der afwijkingen van de anus; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Prolapse Prolaps	Haemorrhoids Haemorrhoïden	Fissure Fissuur	Eczema Eczeem	Eczema + fistules Eczeem + fistels	Other abnormalities Overige afwijkingen	Total Totaal	
								%	abs.
Men/Mannen									
65-69	77.4	–	18.6	–	3.7	–	0.3	100	349
70-74	82.6	0.8	13.5	0.3	1.5	0.8	0.5	100	399
75-79	81.7	0.7	15.4	–	1.7	–	0.5	100	408
80-84	77.0	1.7	15.9	0.3	4.8	–	0.3	100	290
85 +	79.3	1.5	12.6	–	5.2	0.7	0.7	100	135
Total/Totaal	79.9	0.8	15.5	0.1	3.0	0.3	0.4	100	1581
Women/Vrouwen									
65-69	79.3	0.6	14.7	0.6	3.6	–	1.2	100	333
70-74	81.1	0.8	15.3	0.3	2.2	–	0.3	100	372
75-79	80.3	1.4	16.9	–	1.1	–	0.3	100	360
80-84	81.5	0.8	13.0	0.4	4.3	–	–	100	253
85 +	80.8	0.7	14.8	–	3.7	–	–	100	135
Total/Totaal	80.5	0.9	15.1	0.3	2.8	–	0.4	100	1453

was thus found in more women than men, and more were found in older than in younger subjects. The remaining abnormalities played a quantitatively unimportant role; for men enlargement of the spleen 2; kidney condition 3; tumours 5; "other abnormalities" 27; for women these figures were 1, 2, 27, and 45, thus relatively many more tumours and more "other abnormalities."

Genital abnormalities were found in about 1/7th (11-17%) of the men examined. No age effect could be found either here or for the separately listed abnormalities. Hydrocele and "other abnormalities" were about equally frequent in each of the age groups: in 5-8% of the subjects; a missing testis or cryptorchism was seen in only 23 men (1.5%).

Anal abnormalities were seen in 1/5th (17-23%) of the men and 1/5th (19-21%) of the women (see Table 46, page 132). (No examination on this point was made of 22 men and 93 women.) There were no age effects of any importance detected. About 3/4ths of all abnormalities in both sexes were haemorrhoids. Here too the frequency in the separate age groups differed little (men 13-19%, women 13-17%). In order of importance, there were found further for the men: eczema 47 cases (3%), prolapse 13, "other abnormalities" 7, eczema and fistulas 4, and fissure 2; for the women these respective figures were 40, 13, 6, 0, and 4. The results of the *rectal examination*, which however could not be done on a large number of subjects, are reported in Table 47 (page 134).

Consideration of this Table shows that for a large proportion of the men, and to an extent which rapidly increases in the successive age groups, an enlarged prostate was found in about 1/3rd to 1/2 of the subjects. (Sheldon and Hobson, on the basis of their studies, estimated the frequency of prostate enlargement in men of 65 and over at 25%.) The other abnormalities found by this study are comparatively unimportant. Only an inadequate sphincter-contraction was rather frequently determined, particularly for women and then relatively most in the oldest groups (13-14% for women of 80 years and over).

Examination of the *female sex organs* could also only be done for part of the entire group. Table 48 (page 135) gives the frequency of abnormalities of the vulva and vagina. The most frequently seen was prolapse of the vaginal wall, which was present in 12-17% of the 1222 women. In addition, kraurosis was rather frequently seen, especially in the oldest group, and further stress incontinence with or without vaginal prolapse: in 4-11% of all subjects.

Examination of the internal genital organs of 909 women (see Table 49, page 135) showed abnormalities in 8-13%. In 22 women the investi-

Table 47. Kind of abnormalities at rectal examination; by sex and age groups; percentages.
Tabel 47. Aard der afwijkingen bij rectaal onderzoek; per geslacht en leeftijdsgroep; percentages.

Ages Leeftijd	No abnormalities Geen afwijkingen	Insufficient sphincter contraction Onvoldoende sphincter-aanspanning	Enlarged prostate Vergrote prostaat	Polyp, carcinoma Poliep, carcinoom	Other abnormalities Overige afwijkingen	Total Totaal	
						%	abs.
Men Mannen							
65-69	69.5	1.3	28.9	–	0.3	100	305
70-74	65.3	1.7	31.6	–	1.4	100	351
75-79	57.7	2.0	38.4	0.8	1.1	100	357
80-84	52.8	5.3	40.7	0.4	0.8	100	243
85 +	43.2	7.6	46.7	0.8	1.7	100	118
Total Totaal	60.1	2.8	35.7	0.4	1.0	100	1374
Women Vrouwen							
65-69	94.3	3.4	–	–	2.3	100	262
70-74	94.1	3.5	–	0.7	1.7	100	288
75-79	91.7	5.9	–	0.4	2.0	100	253
80-84	86.4	13.0	–	0.6	–	100	169
85 +	84.8	13.9	–	–	1.3	100	79
Total Totaal	91.6	6.4	–	0.4	1.6	100	1051

gators found a benign erosion, 5 had a suspect erosion, and 4 a carcinoma (i.e. $\pm \frac{1}{2}\%$ of all the women). "Other abnormalities" were seen in 3-9%. None of the abnormalities indicated an age effect.

LIMBS

Arms, hands

Table 50 (page 136) indicates that with increasing age the percentage of persons with abnormalities of the arms and/or hands clearly increased: for the men from 24 to 42% and for women from 25 to 39% (41% in the 80-84

Table 48. Kind of abnormalities of the vulva and vagina; by age groups; percentages
Tabel 48. Aard der afwijkingen van vulva en vagina; per leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Kraurosis	Eczema Eczeem	Prolapse Prolaps	Stress incontinence	Prolapse + stress incontinence Prolaps + stress incontinence	Fluor Leucorrhoea	Virgin (in spite of marriage) Virgo (ondanks huwelijk)	Other abnormalities Overige afwijkingen	Total Totaal	
										%	abs.
65-69	68.3	4.2	2.1	11.9	3.1	3.5	2.1	1.0	3.8	100	286
70-74	69.4	4.7	0.6	16.1	1.9	2.2	1.6	0.3	3.2	100	316
75-79	63.3	4.6	2.0	17.0	4.6	3.6	1.0	0.3	3.6	100	305
80-84	64.1	6.7	1.4	12.0	7.2	3.8	1.0	1.4	2.4	100	209
85 +	57.5	8.5	3.8	12.3	4.7	3.8	3.8	0.9	4.7	100	106
Total Totaal	65.8	5.2	1.7	14.3	4.0	3.3	1.6	0.7	3.4	100	1222

Table 49. Kind of abnormalities of the internal genitals; by age groups; percentages
Tabel 49. Aard der afwijkingen van de inwendige genitaliën; per leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Benign erosion Goedaardige erosie	Suspect erosion Verdachte erosie	Carcinoma Carcinoom	Myoma Myoom	Abnormalities of the ovaries Afwijkingen van de ovaria	Other abnormalities Overige afwijkingen	Total/Totaal	
								%	abs.
65-69	86.7	1.8	0.4	–	1.8	0.4	8.9	100	225
70-74	89.5	2.4	0.8	0.4	–	0.4	6.5	100	248
75-79	88.1	3.2	0.9	0.5	0.5	0.5	6.3	100	221
80-84	91.7	2.1	–	0.7	1.4	1.4	2.7	100	146
85 +	90.0	2.9	–	1.4	1.4	–	4.3	100	69
Total Totaal	88.8	2.4	0.6	0.4	0.9	0.6	6.3	100	909

Table 50. Kind of abnormalities of the arms and/or hands; by sex and age groups; percentages

Tabel 50. Aard der afwijkingen aan armen en/of handen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Rheumatoid arthritis Rheumatoide arthritis	Arthrosis deformans	Other rheumatic symptoms Overige reumatische verschijnselen	Stiffness Stijfheid	Tremor	Paresis	Paralysis	Other abnormalities Overige afwijkingen	Totaal Total	
										%	abs.
Men/Mannen											
65-69	75.9	2.0	3.1	2.0	2.8	7.7	1.1	0.6	4.8	100	351
70-74	77.1	2.7	2.7	0.5	2.7	8.4	0.7	0.5	4.7	100	406
75-79	69.5	1.5	4.4	0.5	4.4	11.9	1.7	0.5	5.6	100	411
80-84	66.4	1.0	5.4	1.7	8.8	12.9	0.7	–	3.1	100	295
85 +	58.1	2.9	7.2	0.7	8.7	17.4	0.7	0.7	3.6	100	138
Total/Totaal	71.3	1.9	4.1	1.1	4.8	10.7	1.1	0.4	4.6	100	1601
Women/Vrouwen											
65-69	74.8	3.4	5.5	1.4	4.0	6.0	0.3	0.3	4.3	100	348
70-74	69.9	7.6	7.4	2.8	3.1	5.1	1.0	0.3	2.8	100	393
75-79	63.3	6.8	7.9	2.6	6.8	9.4	0.8	–	2.4	100	382
80-84	59.3	7.4	8.1	1.9	8.1	11.9	0.7	1.1	1.5	100	270
85 +	61.1	6.6	6.6	2.0	9.2	11.2	1.3	–	2.0	100	152
Total/Totaal	66.7	6.3	7.1	2.2	5.7	8.2	0.8	0.3	2.7	100	1545

group). The latter, with the exception of the very oldest, consistently had slightly more abnormalities than the former. Tremors (with one exception) were relatively the most frequent symptom, especially in the oldest groups and particularly among the men. Of the men up to 75 years, ± 8%, and of the women of that age 6%, had a tremor.

Felbo found in his Bornholm study that 11 and 17% of the men of 65 and 70 had tremors, and the corresponding percentages for women were 14 and 13.

There were rather numerous cases of rheumatoid arthritis, arthrosis deformans, and stiffness observed, especially among the women: in 31 (± 2%), 66 (± 4%) and in 77 (almost 5%) of the men and 98 (more than 6%), 110 (7%), and 88 (almost 6%) of the women. Only 7 men and 5 women had paralyses. Pareses alone were found in 17 men (± 1%) and 12 women (0.8%).

Legs, feet

Abnormalities of legs and/or feet were more frequent than those of arms and/or hands, as can be seen from comparison of Table 51 (page 138) with Table 50. For women, except for the oldest, this difference was even significant in each age group. As in the preceding group of abnormalities, here too more were found at more advanced ages and in women in almost all age groups significantly more than in men. In this picture, however, arthrosis deformans played the largest role: about 1 in 10 of the men (8-15%) and 1 in 5 women (19-24%) had symptoms of this condition. (Felbo established appreciably more cases of chronic rheumatoid arthritis and osteoarthritis; Hobson and Pemberton also found much higher percentages. This is probably partially ascribable to differences in evaluation.) In relation to this affection, no distinct age effect could be seen. In second place was stiffness, which was rather frequently encountered in the oldest group. Paralyses were seen in very few subjects; 6 men and 7 women. Pareses were found in 22 (± 1.5%) of the men and 14 (± 1%) of the women.

URINE

Examination was made of the (non-sterilely sampled) urine of almost all the subjects: 1562 men and 1510 women (see Table 52, page 139). In the successive age groups albumin, glucose, or urobilin was found for 16 to 32% of the men and 18-32% of the women, and in significantly more of the old-

Table 51. Kind of abnormalities of the legs and/or feet; by sex and age groups; percentages

Tabel 51. Aard der afwijkingen aan benen en/of voeten; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Rheumatoid arthritis Rheumatoide arthritis	Arthrosis deformans	Other rheumatic symptoms Overige reumatische verschijnselen	Stiffness Stijfheid	Tremor	Paresis	Paralysis	Other abnormalities Overige afwijkingen	Total Totaal	
										%	abs.
Men/Mannen											
65-69	76.0	0.6	9.7	0.3	3.4	1.1	1.4	0.6	6.9	100	350
70-74	75.1	0.7	8.1	0.7	4.9	1.2	0.7	0.2	8.4	100	406
75-79	61.3	1.2	10.9	0.7	10.7	1.9	1.7	0.2	11.4	100	411
80-84	62.5	0.3	7.8	0.3	13.6	1.0	2.0	–	12.5	100	295
85 +	48.7	0.7	15.2	–	17.4	7.2	0.7	1.4	8.7	100	138
Total/Totaal	66.8	0.8	9.8	0.5	8.8	1.9	1.4	0.4	9.6	100	1600
Women/Vrouwen											
65-69	59.0	3.4	21.0	1.1	3.4	–	0.6	0.3	11.2	100	348
70-74	58.2	4.6	19.3	0.8	4.1	1.0	1.5	0.3	10.2	100	393
75-79	50.5	3.9	19.4	1.3	9.2	0.5	0.3	0.5	14.4	100	382
80-84	46.6	4.1	22.6	–	12.6	1.9	1.1	1.1	10.0	100	270
85 +	50.7	2.6	23.7	–	12.5	2.6	1.3	–	6.6	100	152
Total/Totaal	53.6	3.9	20.7	0.8	7.5	1.0	0.9	0.5	11.1	100	1545

Table 52. Presence of albumin, glucose, or urobilin in the urine; by sex and age groups; percentages

Tabel 52. Aanwezigheid van albumen, glucose of urobiline in de urine; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No albumin, glucose or urobilin Geen albumen, glucose of urobuline	Albumin Albumen	Glucose	Urobilin Urobiline	Albumin + glucose Albumen + glucose	Albumin + urobilin Albumen + urobiline	Glucose + urobilin Glucose + urobiline	Albumin + glucose + urobilin Albumen + glucose + urobiline	Total Totaal	
									%	abs.
Men/Mannen										
65-69	83.7	5.6	2.4	6.2	–	1.8	0.3	–	100	340
70-74	78.8	5.2	3.0	9.5	0.5	2.5	0.5	–	100	401
75-79	69.8	10.6	3.4	12.3	0.7	3.0	–	0.2	100	406
80-84	65.5	14.0	2.8	13.7	1.1	2.1	0.4	0.4	100	285
85 +	68.5	15.4	3.8	5.4	1.5	4.6	–	0.8	100	130
Total/Totaal	74.2	9.2	3.0	9.9	0.6	2.6	0.3	0.2	100	1562
Women/Vrouwen										
65-69	82.4	8.5	2.6	5.0	0.6	0.9	–	–	100	341
70-74	73.3	11.1	4.7	7.0	1.6	2.3	–	–	100	387
75-79	70.9	13.3	3.7	5.8	2.1	3.2	0.5	0.5	100	377
80-84	67.9	16.2	4.6	6.6	1.2	2.7	0.4	0.4	100	259
85 +	68.5	17.1	2.7	6.2	1.4	4.1	–	–	100	146
Total/Totaal	73.3	12.5	3.8	6.1	1.4	2.5	0.2	0.2	100	1510

est than the youngest. There was little difference between the sexes in this respect. As single abnormality, principally urobilinuria was found in younger men and albuminuria in older men; for women in each age group there was more albumin than urobilin found in the urine. The investigators found albumin in the urine of a total of 196 men (13% of all subjects examined) and 250 women (17%); sugar, on the contrary, in "only" 64 men (4%) and 84 women (6%). Two or more of these abnormalities simultaneously were found in 57 men and 64 women.

It has already been stated in this report that a rather large percentage of the examined subjects had diabetes. Although glycosuria need not always indicate the presence of diabetes, the large number of cases of this abnormality nevertheless causes concern in this connection. This finding is, however, not unexpected, because it is known that the percentage of diabetics in the average population is estimated at 1 to 2, and the frequency of the disease increases sharply with advancing age.

The sediment of almost all urines which showed albumin was examined (see Table 53). For the greater part of the cases only a few leucocytes were found (in 25-40% of the 189 men and in 33-49% of the 243 women whose urine sediment was examined). Many leucocytes were found in 13-35% of these sediments for men and 15-33% for women. In the higher age groups leucocytes were found in slightly more cases than in the younger groups. Erythrocytes were found in the sediment to a much smaller extent than leucocytes; in a total of 40 men (leucocytes: 128) and 36 women (leucocytes: 177). Cylinders were found for 8 men and 9 women.

PREVIOUSLY UNKNOWN ABNORMALITIES FOUND FOR THE FIRST TIME

In the successive age groups in 33, 32, 32, 33, and 33% of the men and 29, 30, 27, 28, and 23% of the women an abnormality not previously known to the investigating physician was found. These percentages suggest that such abnormalities were found for slightly more men than women. This may depend on less frequent consultation of a doctor by men than by women. It also appears that, with the exception of the oldest group of women, the age of the subjects and the frequency of the previously unknown abnormalities found during the study were not related to each other.

The majority of these abnormalities were not of a serious nature, which was the case for 27-29% of all the men and 16-25% of all the

Table 53. Kind of sediment abnormalities with albuminuria; by sex and age groups; percentages

Tabel 53. Aard der sedimentafwijkingen bij albuminurie; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No abnormalities Geen afwijkingen	Crystals Kristallen	Cylinders	Leucocytes, sporadic Leucocyten, sporadisch	Leucocytes, many Leucocyten, vele	Erythrocytes, sporadic Erythrocyten, sporadisch	Erythrocytes, many Erythrocyten, vele	Leucocytes + erythrocytes Leucocyten + erythrocyten	Other abnormalities Overige afwijkingen	Total Totaal	
										%	abs.
Men Mannen											
65-69	12.0	16.0	4.0	36.0	16.0	4.0	4.0	8.0	–	100	25
70-74	12.5	25.0	–	24.9	12.5	6.3	–	18.8	–	100	32
75-79	3.4	6.9	3.4	39.8	19.0	8.6	1.7	15.5	1.7	100	58
80-84	6.3	14.6	8.3	31.2	25.0	–	–	14.6	–	100	48
85 +	–	7.7	3.8	26.9	34.8	3.8	11.5	7.7	3.8	100	26
Total Totaal	6.3	13.2	4.2	32.8	21.2	4.8	2.6	13.8	1.1	100	189
Women Vrouwen											
65-69	3.0	12.1	6.1	39.4	15.2	–	–	24.2	–	100	33
70-74	1.8	9.1	5.5	43.6	21.8	5.5	1.8	7.3	3.6	100	55
75-79	1.4	20.0	1.4	43.0	17.1	7.1	–	10.0	–	100	70
80-84	–	21.2	1.9	32.8	32.7	3.8	–	3.8	3.8	100	52
85 +	–	12.1	6.1	48.5	18.2	–	–	12.1	3.0	100	33
Total Totaal	1.2	15.6	3.7	41.2	21.4	4.1	0.4	10.3	2.1	100	243

women. For 75 men (3-7% in the various age groups) and 100 women (5-8%), however, the physicians found abnormalities which they indeed considered serious.

Nature of the previously unknown abnormalities

As can be seen from the questionnaire, the investigator was asked to note which serious or non-serious abnormalities previously unknown to him were seen in the course of this investigation. An attempt was made, when more than one abnormality was reported, to code these in the order of importance (seriousness). The result of the tabulation of these data was, however, difficult to interpret, because so many combinations were represented. Table 54 therefore indicates only the principal previously unknown abnormalities or groups of abnormalities which were found per age group per sex.

Consideration of the Table shows that in the first place this investigation established (namely in 24.4% of the abnormalities discovered) an above-normal blood pressure. The opinion of the various investigators may have differed on what is understood by high blood pressure, of course, but it is nevertheless clear that it is worthwhile to measure the blood pressure of elderly people more often and more regularly, although finding hypertension does not mean that a suitable treatment, even when necessary, can always be effected.

In second place (17.0% of the abnormalities discovered) were abnormalities found through examination of urine. Although many of these abnormalities are probably caused by harmless or relatively harmless conditions (e.g. cystitis in old women) and probably more were reported than were actually present because in general no sterilely sampled urine was examined, this result also supports the opinion that in the aged examination of the urine is often required. Among these abnormalities, cases of glycosuria were found in particular. Thus, for example, the study disclosed previously unknown cases of diabetes, which is in itself an important result of the investigation.

Third place among the previously unknown abnormalities was taken by those found through rectal examination (10.5%). In 85 of the 90 cases these abnormalities were found in men; this will in most cases have been prostate enlargement.

A high sedimentation rate was the most important previously unknown abnormality in 8.4% of all cases. Other previously unknown abnormalities were heart conditions (61 cases), low Hb content (50 cases), tumours

Table 54. Kind of abnormalities discovered and previously unknown; by sex and age groups; absolute numbers

Tabel 54. Aard der gevonden en tevoren onbekende afwijkingen; per geslacht en leeftijdsgroep; absolute aantallen

Ages Leeftijd	Mental abnormalities Geestelijke afw.	Elevated ESR Verhoogde BSE	Low Hb content Verlaagd Hb	High blood pressure Verhoogde tensie	Urine abnormalities Urine-afw.	Heart abnormalities Hart-afw.	Lung abnormalities Long-afw.	Tumour Tumor	Abn. at rectal examination Afw. bij rectaal onderzoek	Abn. at vaginal examination Afw. bij vaginaal onderzoek	Other abnormalities Andere afw.	No abnormalities Geen afw.	Total Totaal
Men/Mannen													
65-69	–	5	4	22	12	8	4	4	26	–	29	237	351
70-74	1	3	7	24	11	6	1	2	17	–	58	277	407
75-79	1	10	9	20	18	12	3	2	22	–	32	282	411
80-84	–	11	6	17	14	6	3	2	12	–	27	198	296
85 +	1	3	–	3	8	1	1	1	8	–	20	92	138
Subtotal Subtotaal	3	32	26	86	63	33	12	11	85	–	166	1086	1603
Women/Vrouwen													
65-69	1	3	2	45	15	6	–	1	3	7	19	246	348
70-74	–	14	4	33	26	6	2	3	1	6	24	274	393
75-79	–	16	7	19	18	3	4	4	1	2	30	278	382
80-84	1	2	8	17	16	6	1	2	–	2	22	194	271
85 +	–	5	3	8	7	7	–	1	–	1	3	117	152
Subtotal Subtotaal	2	40	24	122	82	28	7	11	5	18	98	1109	1546
General total Algeheel totaal	5	72	50	208	145	61	19	22	90	18	264	2195	3149

(22 cases = 2.6% of the previously undiscovered abnormalities), and conditions found during vaginal examination. The "other" previously unknown abnormalities formed 30.9% of this group.

Mental abnormalities, which were previously unknown to the physician, were found in the course of the study in a total of only 5 persons.

The previously unknown abnormalities characterized as "serious" can be listed as follows:

For 75 men: high blood pressure 19, heart abnormalities 12, those found at rectal examination 7, urine abnormalities 6, tumours 5, anaemia 3, high sedimentation rate 2, other cases 20, unknown 1.

For 100 women; high blood pressure 33, heart conditions 12, urinary abnormalities 10, tumours 8, abnormalities at vaginal examination 6, high sedimentation rate 6, low haemoglobin content 4, lung abnormalities 3, other abnormalities 18.

This enumeration shows that high blood pressure is the most frequently reported as a serious condition previously unknown to the physician. The distribution of the various abnormalities over the age groups was rather equal with the exception of high blood pressure which in half of the cases among women was found in the youngest age group.

CHAPTER VI

PSYCHOLOGICAL DATA

In evaluating the data to be reported in this chapter, it must be kept in mind throughout that they are based for the most part on the answers given by the subjects. Some degree of subjectivity is always present, be it larger or smaller. The present investigation did not lend itself to the minimizing of this element to any great extent. For this, investigations of a different nature and wider scope are required.

DISPOSITION OF TIME

Reading

As has already appeared from several other studies [37], the reading of newspapers is one of the foremost activities of the aged.

Table 55 (page 146) indicates once again that very many old people read the paper daily. More men than women and more younger than older subjects reported doing so. The fact that women have more other activities than men, such as housekeeping, may explain this difference to some extent. For the men, the percentages for the youngest and the oldest groups are 93 and 73 and for the women 85 and 53. The fact that there is less reading at more advanced ages undoubtedly depends upon deteriorating eyesight, becoming tired more quickly as the years increase, a waning interest in news, etc. The oldest women were relatively the least interested in occupying themselves daily with newspaper reading. In general, very few read no newspaper at all, except in the group of women of 80 and over, of whom about a quarter never looked at a paper.

Approximately 2/5ths of all the men and 1/4th to 1/3rd of all the women who read the newspapers daily went through the whole paper; only in

[37] e.g. Diederich, J.; Levensomstandigheden van bejaarden in kleinere en middelgrote gemeenten in Nederland (Living conditions of the aged in small and medium sized municipalities in The Netherlands). Amsterdam 1958, Publ. no. 20 Nat. Raad voor Maatsch. Werk (National Council for Social Work). This volume reports that more than 45% of the aged who were questioned read regularly or very often and that 88% subscribed to a newspaper. A Swedish study found that 89% of the aged read the newspaper daily.

Table 55. Frequency of newspaper reading; by sex and age groups; percentages
Tabel 55. Frequentie van krantenlezen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Never Nooit	Occasionally Af en toe	Daily Dagelijks	Total Totaal	
				%	abs.
Men/Mannen					
65-69	2.0	4.8	93.2	100	351
70-74	3.9	6.6	89.5	100	407
75-79	6.8	10.0	83.2	100	411
80-84	9.2	11.2	79.6	100	295
85 +	13.0	13.8	73.2	100	138
Total/Totaal	6.0	8.6	85.4	100	1602
Women/Vrouwen					
65-69	5.7	9.8	84.5	100	348
70-74	6.9	12.7	80.4	100	393
75-79	7.6	10.7	81.7	100	382
80-84	21.4	18.5	60.1	100	271
85 +	32.2	15.1	52.7	100	152
Total/Totaal	11.8	12.8	75.4	100	1546

the oldest group was the reading less thorough than in the younger groups. In the older age groups more of the regular readers read in particular the miscellaneous news than in the younger groups; among men the percentages rose from 14 to 22, among the women from 19 to 26. Very few read primarily news of a political nature and those who did were mostly men (52, and only 3 women). Finally, relatively few men concerned themselves with reading the serial story, advertisements, plus personal notices (± 5%, women ± 16%) and with the miscellaneous news plus the serial story (± 10%, women ± 20%), and conversely, few women (± 10%, men ± 23%) concentrated principally on political news plus the serial.

Magazines appeared to be read far less by the aged than newspapers. The number of persons who read a magazine regularly, i.e. at least once a month, again distinctly dropped with increasing age: among men from 53 to 31%, women 57 to 36%. In each group there were consistently slightly more habitual women readers than men. In the successive age groups the percentage of men who never read magazines increased from 36 to 59% and that of women from 33 to 54%. These results give food for thought, because it is known that many old people like to "look at pictures." Subscription costs, which are high in terms of the often

limited incomes, are undoubtedly an important factor here. Further, it should also be kept in mind that especially the very oldest generation grew up with this sort of "reading" somewhat less than the generations after them.

The percentage of persons who regularly read a book (at least once a month) was still again appreciably lower than the figures for magazine reading. For both sexes the drop in percentage from ± 31 to ± 18 with increasing age illustrates this well.

Table 56. Frequency of reading books; by sex and age groups; percentages
Tabel 56. Frequentie van boekenlezen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Never or almost never Nooit of bijna nooit	Occasionally Af en toe	Regularly Geregeld	Total Totaal	
				%	abs.
Men/Mannen					
65-69	46.7	22.5	30.8	100	351
70-74	50.2	20.7	29.1	100	406
75-79	58.4	18.1	23.5	100	409
80-84	63.7	17.3	19.0	100	294
85 +	71.0	10.9	18.1	100	138
Total/Totaal	55.8	19.0	25.2	100	1598
Women/Vrouwen					
65-69	49.4	22.7	27.9	100	348
70-74	49.9	20.2	29.9	100	391
75-79	54.4	20.3	25.3	100	380
80-84	59.0	20.7	20.3	100	271
85 +	66.9	13.9	19.2	100	151
Total/Totaal	54.2	20.2	25.6	100	1541

Table 56 indicates that 47-71% of the men and 49-67% of the women never read books at all. Various factors will have contributed to this high percentage: finances, poorer eyesight, lack of interest, and, especially, never having been in the habit of reading books. Those who regularly read books chose in the first place a novel; this was especially true of women. With increasing age, however, novels were less often one of the sorts of books read most. The percentages (based on regular readers) in the youngest and oldest groups were for men 53 and 36, and for women 76 and 59. With increasing age, interest greatly increased, especially among women, in religious and philosophical books (for women, for

instance, from 5 to 24%). The absolute numbers are, however, rather small; in total 59 men and 60 women reported reading this sort of books most. In a number of cases, as brought out by further questioning, this had to do with the reading of one or two particular religious works, among which the Bible took foremost place. Among the men there was a certain amount of interest in travel books (52); biographies were especially preferred by 40 men and 30 women.

Listening to the radio

Although the results of various parts of the survey which represent the subjects' own answers to given questions should in general be taken with a certain amount of reservation, this is particularly true of questions concerning listening to the radio. It can be assumed for this case, among other things on the basis of information supplied by third parties, that an answer such as "I listen an average of 1 to 3 hours a day" often only means that the radio was on for about that many hours. It did not mean that it was also really listened to all that time.

Table 57 indicates that the very great majority of the subjects at least had the opportunity to listen to the radio. Somewhat more men than women were in this position. With increasing age, however, the percentages distinctly decreased; for men from 94 to 76, for women from 95 to 72.[38] The percentages of those who listened on the average less than one hour changed little with age, however: 39-47% for men and 33-44% for women. In contrast, the number of those who listened more than one hour dropped distinctly with increasing age. The greater part of the last group of listeners, however, listened only on the average for 1 to 3 hours a day. This undoubtedly depends among other factors on declining hearing ability, a greater tendency to tire, and dwindling interest.

The investigation showed that it was often difficult to record a preference for a particular programme. This circumstance must be kept in mind in considering Table XVI, which shows that consistently almost half (46-51%) of the men listeners were primarily interested in the news and that the women in particular considered the church services and religious broadcasts as the most important programmes.[39] For the latter there was a clear age effect; the percentage doubled from 24 in the youngest group to 47 in the oldest. The same phenomenon was also

[38] Diederich found in 1951-1952 that 70% of the aged had access to a radio.
[39] This was also apparent from Diederich's study.

Table 57. Frequency of listening to the radio (wireless); by sex and age groups; percentages
Tabel 57. Frequentie van het luisteren naar de radio; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Does not listen Luistert niet		Listens on an average of: Luistert gemiddeld:				Total Totaal	
	No radio, no wish for one Geen radio, wenst er ook geen	No radio, would listen in if in possession of radio Geen radio, zou graag luisteren, indien in bezit van radio	< 1 hour a day < 1 uur per dag	1-3 hours a day 1-3 uur per dag	3-5 hours a day 3-5 uur per dag	> 5 hours a day > 5 uur per dag	%	abs.
Men/Mannen								
65-69	4.0	2.3	39.3	43.6	9.4	1.4	100	351
70-74	3.4	2.0	46.6	36.9	6.9	4.2	100	407
75-79	9.5	2.4	40.9	35.5	7.8	3.9	100	411
80-84	12.6	6.5	41.9	28.7	6.5	3.8	100	293
85 +	18.2	5.8	43.9	24.8	5.8	1.5	100	137
Total/Totaal	8.1	3.3	42.4	35.5	7.5	3.2	100	1599
Women/Vrouwen								
65-69	2.9	2.3	37.4	43.3	8.9	5.2	100	348
70-74	6.6	1.5	38.1	37.2	10.5	6.1	100	392
75-79	12.3	4.7	33.1	39.7	5.2	5.0	100	381
80-84	18.6	3.0	43.5	26.2	7.0	1.5	100	271
85 +	23.6	4.1	37.7	26.4	4.1	4.1	100	148
Total/Totaal	11.0	3.0	37.6	36.2	7.6	4.6	100	1540

observed for the men (7 to 20%). Interest in other kinds of broadcasts in general dropped further as age increased. A good many women were interested in the news also. Serious music, and even more so lectures, attracted few listeners in any group; this also held for the older groups with regard to radio plays.

Attending films or other performances

As could be expected, few of these old people, and especially of the oldest, went to see films. With increasing age the percentage of men who went at least more than once a year decreased from 25 to 2; for women, 19 to 3. Of the 242 men and 206 women who said they went more than once a year, 47 and 55 respectively reported that this was at the initiative of others.

The same picture was presented by the results concerning attendance at theatres, concerts, or other "performances" such as parades, shows, etc., although the number of those who did so at least once a year was somewhat higher than for the films. Here too, increase in age caused a sharp drop in the absolute and relative numbers of those who attended: the percentages dropped for men from 35 to 7 and for women from 26 to 5. Just as for films, the men went out more often than the women. To the extent that the old people did go out, attendance at concerts or theatrical performances predominated over the others to an appreciable degree (for men the total figures were 163 and 70, for women 131 and 40, respectively).

Only 34 men and 16 women went to all three kinds of "performances". Of the total of 320 men and 236 women who attended such a performance at least once a year, 53 men and 49 women did so at the initiative of others. Just as in the case of the films, here too it held that relatively more women than men followed others' initiative. To the extent that the eldest still went out, they naturally did so more frequently on the initiative of others than did the younger people (e.g., 8 of the 28 men of 80 and over and 9 of the 17 women of that age).

Sunday activities in the past and present

The question concerning how Sundays were spent in the past and whether the subjects had been bored on that day was answered for the latter part of the question affirmatively by only 1 woman. A large part of the entire group had in the past gone to church on Sunday; 34-44% of the men and

43-58% of the women (significantly more women than men in most of the age groups). In view of the fact that the percentages relative to the various activities in successive age groups of men and women did not differ much, it is acceptable to report the mean percentages to supply a general impression of the situation (see Table XVII).

Table XVII shows, among other things, that slightly less than 10% of all subjects had in the past done "nothing" or slept on Sundays, apparently, however, without being bored. Further, distinctly more men than women had given time to "amusement". Sport still played a very insignificant role.

In old age, Sundays still seemed to cause no boredom: at least, only 2 men and 3 women reported themselves bored on Sundays at the time of the survey. In this last period, too, Sunday churchgoing, even if no longer so important, was an "occupation." Obviously age played an important part. The percentage of church-goers first rose from 28 to 33 and then dropped to 21 among the men, and dropped from 38 to 12 for the women (see Table XVIII). Conversely, the percentage of those who only "sat still" or "stayed home" rose from 21 to 49 for men and from 23 to 53 for women. Also, at advanced ages in a number of cases walking was still an important activity, for more men than women.

Vacations in the past

To the question of how vacations were spent in the past, an appreciable part of the whole group of subjects, i.e. 18% of the men and of the women, supplied no answer. It need cause no surprise (though the figures do say a great deal) that more than half of those who did answer said that there had never been any question of having a vacation.

In the older groups of men there were appreciably more persons who had never known a vacation than in the younger; the percentage rose in the successive age groups from 43 to 65 (in the groups of 80 and over). Among the women the percentage shifted between 55 and 62; a distinct age effect was not detectable. When there had been a vacation it had seldom led to boredom (in the case of only 8 men and 7 women). In the majority of cases (even though it was sometimes only a short period) a trip had been taken: 155 men and 165 women reported having once or more stayed with friends, family, etc., and 210 men and 212 women had stayed at least once in a hotel, pension, or rented bungalow.

Boredom

In considering the results related to the question of whether the subject had sometimes been bored, the necessary reservations must again be applied. Being bored is an elastic concept; some old people will not readily admit boredom, other, on the other hand, perhaps tend to complain of it rather readily. It can be seen from Table 58 that in the successive age

Table 58. Extent of boredom; by sex and age groups; percentages

Tabel 58. Mate van verveling; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Never Nooit	Occasionally Af en toe	Frequently Vaak	Total Totaal	
				%	abs.
Men/Mannen					
65-69	83.2	13.7	3.1	100	350
70-74	80.7	14.6	4.7	100	405
75-79	72.4	20.5	7.1	100	410
80-84	72.0	22.5	5.5	100	293
85 +	67.9	24.6	7.5	100	134
Total/Totaal	76.5	18.2	5.3	100	1592
Women/Vrouwen					
65-69	81.1	14.9	4.0	100	348
70-74	77.3	19.4	3.3	100	392
75-79	75.5	18.7	5.8	100	379
80-84	69.2	21.9	8.9	100	269
85 +	62.5	27.8	9.7	100	144
Total/Totaal	74.8	19.5	5.7	100	1532

groups consistently more subjects said that they were either occasionally or frequently bored. The percentages for men rose from 14 to 25 and from 3 to 8, for women from 15 to 28 and from 3 to 10 for the former and latter respectively. Women thus reported somewhat more boredom than men. The Table indicates that in this investigation one in four to six men and women were bored occasionally. This ratio seems rather favourable, at least in terms of the frequently reported opinion that many old people are bored a good deal of the time.

"Free" time activities

In spite of the fact that for the majority of the aged it is somewhat strange to speak of "free" time, an attempt was nevertheless made to get some

idea of the activities of old people in the time which is not given to employment or necessary household activities.

On this point too, very few persons, viz. 2 men and 2 women, reported that they were bored in "free" time. A number of subjects which increased with age filled up the time with chatting, looking out of the window, listening to the radio, etc. The percentage rose for men from 9 to 36 and for women from 7 to 34 (see Table 59, page 154). The majority said that they used the time for all sorts of small jobs (this is taken in a very broad sense); for men the percentage dropped with age, from 51 to 28; for women there was actually no distinct drop with age, the percentage shifting between 51 and 65. Social activities or helping their children were mentioned only rarely, reading, however, slightly more often: by 13-17% of the men and 8-10% of the women.

Object and nature of certain favourite pastimes

As shown by Table XIX, the great majority of the subjects had no special favourite pastimes. The relevant percentage rose distinctly with age; for men from 44 to 69 and for women from 48 to 67. Somewhat more men than women did have a favourite pastime of some sort. In general this was considered as "a pleasurable pastime"; considerably more than half of those who had a favourite pastime found that its most important object. With rising age this percentage relatively dropped somewhat, however, and the percentage of those who saw their favourite pastime only as a time-filler rose proportionately.

Only a few of the subjects kept up a hobby or favourite pastime as a means of earning money (72 men and 13 women) or to be of service to others (39 men and 88 women; the rather high number of the latter is undoubtedly connected with the knitting which many old women do with pleasure).

The "pastimes" most frequently mentioned by 766 men (see Table 60, page 155) were gardening (24-35%), handicrafts, repair work, carpentry, etc. (12-20%) and keeping or tending animals (13-15%, with as exception 26% in the 85 and over group; the relevant absolute number is, however, only 11). Collecting was mentioned by 0.8-4%, walking by 0-4%, fishing by 0 (85 and over) – 9%, reading by 2-7%, playing cards by 5-19% (the latter figure applies to the group of 85 and over, the others do not go higher than 10). Among the men, 7-21% had other pastimes.

For 667 women, knitting, crocheting, and handwork were the most frequently mentioned pastimes (60-69%), age having apparently hardly

Table 59. Way of spending "leisure" time; by sex and age groups; percentages
Tabel 59. Wijze van "vrije" tijdsbesteding; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Nothing in particular (talking, looking, listening to the radio) Niets bijzonders (praten, kijken, radio luisteren)	Housework Huishoudelijk werk	Doing odd jobs Kleine werkjes	Reading Lezen	Social work Sociaal werk	Helping the children Kinderen helpen	Paying or receiving visits Bezoek brengen of ontvangen	Other Overige	Total Totaal	
									%	abs.
Men/Mannen										
65-69	9.3	2.0	50.9	13.1	2.3	–	2.0	20.4	100	343
70-74	10.5	2.5	48.9	12.7	2.2	1.5	3.0	18.7	100	402
75-79	20.1	3.5	43.2	13.3	1.0	1.3	3.8	13.8	100	398
80-84	24.6	3.9	38.0	12.7	0.7	1.8	3.2	15.1	100	284
85 +	36.3	3.1	28.3	16.5	0.8	–	2.4	12.6	100	127
Total/Totaal	17.3	3.0	44.2	13.3	1.5	1.0	3.0	16.7	100	1554
Women/Vrouwen										
65-69	6.5	10.9	62.3	9.7	0.9	0.9	5.9	2.9	100	340
70-74	10.8	7.6	58.1	9.5	1.6	0.8	7.1	4.5	100	380
75-79	11.2	7.2	65.1	9.3	0.8	0.5	4.0	1.9	100	375
80-84	21.6	5.4	58.3	8.9	0.8	–	3.5	1.5	100	259
85 +	33.8	3.6	51.1	7.9	0.7	–	0.7	2.2	100	139
Total/Totaal	13.9	7.5	60.4	9.2	1.0	0.5	4.8	2.7	100	1493

Table 60. Kind of hobbies; by sex and age groups; percentages

Tabel 60. Aard der liefhebberijen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Knitting, crocheting, needle work Breien, haken, handwerken	Keeping and taking care of animals Dieren houden en verzorgen	Gardening Tuinieren	Carpentering, making repairs, etc. Knutselen, repareren, timmeren enz.	Collecting Verzamelen	Walking Wandelen	Fishing Vissen	Reading Lezen	Playing cards Kaarten	Other hobbies Overige	Total Totaal	
											%	abs.
Men/Mannen												
65-69	0.5	12.8	27.9	17.4	3.6	0.5	9.2	1.5	9.2	17.4	100	195
70-74	0.4	13.5	27.4	16.1	1.3	2.6	8.3	4.3	5.2	20.9	100	230
75-79	1.7	13.6	34.8	15.9	1.1	–	5.1	4.5	8.0	15.3	100	176
80-84	0.8	15.4	26.0	19.5	0.8	4.1	5.7	4.1	9.8	13.8	100	123
85 +	–	26.2	23.9	11.9	2.4	2.4	–	7.1	19.0	7.1	100	42
Total/Totaal	0.8	14.4	28.7	16.7	1.8	1.7	6.9	3.8	8.4	16.8	100	766
Women/Vrouwen												
65-69	61.9	2.2	11.0	2.2	0.6	–	–	6.1	4.4	11.6	100	181
70-74	61.6	2.2	7.7	2.2	1.1	1.1	–	7.7	4.4	12.0	100	183
75-79	69.0	1.9	10.4	1.3	–	–	0.6	4.5	5.2	7.1	100	154
80-84	63.8	5.2	9.3	–	2.1	–	–	3.1	5.2	11.3	100	97
85 +	59.7	3.8	3.8	–	–	–	–	15.4	9.6	7.7	100	52
Total/Totaal	63.8	2.7	9.1	1.5	0.7	0.3	0.1	6.4	5.1	10.3	100	667

any influence on these activities. Then followed: gardening (4-11%), reading (3-15%, the latter figure applying to the small group of the very oldest!... the others lay between 3 and 8), playing cards (4-10%), keeping animals (2-5%), handicrafts, etc. (0-2%). Seven to 12% of the women had other pastimes.

The investigation also gave separate attention to handicrafts as an activity. Of the men, 48-59% and of the women 78-86% had never done anything of this sort. Thus many more men than women had done handicrafts. It is natural that the number of those who in their old age still did handicrafts is smaller in each successive age group: where 30% of the men between 65 and 70 were still busy, the percentage in the oldest group was only 9. At the time of the investigation, only 3-6% of the women still pursued this activity. Only a very few had begun to do handicrafts for the first time at the more advanced ages (35 men and 3 women). The percentage of those who had formerly done handicrafts but no longer did so, of course, rose in the successive, and especially in the oldest, age groups: for men from 22 to 36, for women from 9 to 19.

Use of a bicycle or a bicycle with an auxiliary motor

From Table 61 it can be seen that almost all the men had once used a bicycle (although in the younger groups somewhat more than in the older; 1% of the youngest group and 7% of the oldest had never bicycled), but that an appreciable part of the women's group, especially of the older groups, had never done so (12-34%). The percentage of those who still cycled naturally dropped rapidly with increasing age; for men from 62 to 7, for women from 25 to 0.4. None of the women subjects seemed to dare to ride a cycle with an auxiliary motor. Of the men of 65 to 70, 11% still used one; this percentage, however, dropped rapidly in the successive age groups: 6, 2, 0.7, and 0! Among the men, 3-6% and among the women 0.7-4% had stopped cycling less than 1 year before, and 10-18% and 0.7-8% within the past 1 to 5 years. Ten percent of the men of 65-69 years and 58% of the men of 85 and over had given up cycling more than 10 years before. For women these figures were 45% and 59%.

Paid employment and other activities

It is remarkable, as Table 62 (page 158) shows, that at the time of the study especially in the younger groups so many people still appeared to have

Table 61. Use of bicycle (or motorized bicycle); by sex and age groups; percentages

Tabel 61. Eventueel gebruik van (brom)fiets; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Has never cycled Heeft nooit gefietst	Still cycling Fietst nog	Still using motorized bicycle Bromfietst nog	Has not cycled (used motorized bicycle) for Heeft niet meer ge(brom)fietst sedert				Total Totaal	
				< 1 year < 1 jaar	1-5 years 1-5 jaren	5-10 years 5-10 jaren	> 10 years > 10 jaren	%	abs.
Men/Mannen									
65-69	1.1	61.9	10.8	3.1	9.7	3.7	9.7	100	351
70-74	1.7	56.2	6.2	3.0	10.4	4.2	18.3	100	405
75-79	3.4	35.1	2.2	6.3	15.3	6.8	30.9	100	411
80-84	5.8	24.5	0.7	3.4	18.0	11.6	36.0	100	294
85 +	6.6	7.3	–	2.9	13.1	11.7	58.4	100	137
Total/Totaal	3.2	42.1	4.6	3.9	13.1	6.8	26.3	100	1598
Women/Vrouwen									
65-69	11.8	24.6	–	3.5	8.1	6.6	45.4	100	346
70-74	21.0	9.5	–	2.0	5.9	6.6	55.0	100	391
75-79	28.5	4.2	–	1.6	4.0	4.0	57.7	100	379
80-84	28.3	0.4	–	0.7	1.5	3.3	65.8	100	269
85 +	34.4	2.0	–	0.7	0.7	3.3	58.9	100	151
Total/Totaal	23.4	9.2	–	1.9	4.6	5.1	55.8	100	1536

Table 62. Time spent in work with or without pay; by sex and age groups; percentages

Tabel 62. Omvang van betaalde of niet betaalde werkzaamheden; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Household work Huishoudelijk werk	No work at all In het geheel geen werkzaamheden	Paid work Betaalde arbeid				Work with little or no pay Niet of bijna niet betaalde arbeid				Total Totaal	
			A few days a week, < 3 hours a day Enkele dagen per week, < 3 uren p. dag	Daily < 3 hours Dagelijks < 3 uren	A few days a week, > 3 hours a day Enkele dagen per week, > 3 uren p. dag	Daily > 3 hours Dagelijks > 3 uren	A few days a week, < 3 hours a day Enkele dagen per week, < 3 uren p. dag	Daily < 3 hours Dagelijks < 3 uren	A few days a week, > 3 hours a day Enkele dagen per week, > 3 uren p. dag	Daily > 3 hours Dagelijks > 3 uren	%	abs.
Men Mannen												
65-69	2.6	35.6	3.7	2.8	4.0	30.8	3.4	9.4	2.3	5.4	100	351
70-74	5.9	41.3	5.4	2.9	2.9	18.2	5.2	7.9	1.7	8.6	100	407
75-79	4.9	53.9	2.9	2.2	1.5	8.3	7.3	9.3	1.2	8.5	100	410
80-84	5.4	63.3	2.0	0.3	2.0	3.7	5.1	10.1	3.0	5.1	100	296
85 +	2.9	70.3	–	3.6	–	1.4	5.8	10.9	–	5.1	100	138
Total Totaal	4.6	49.8	3.3	2.3	2.4	14.3	5.4	9.2	1.8	6.9	100	1602
Women Vrouwen												
65-69	80.0	6.6	0.9	0.3	0.3	3.2	0.3	4.6	0.6	3.2	100	347
70-74	67.0	17.6	0.3	0.5	–	1.3	0.8	9.2	0.5	2.8	100	393
75-79	60.2	24.3	–	0.3	0.3	0.5	0.8	10.5	–	3.1	100	382
80-84	34.3	43.6	0.4	–	–	–	1.8	14.0	0.7	5.2	100	271
85 +	21.7	63.7	0.7	–	–	–	0.7	9.9	–	3.3	100	152
Total Totaal	58.1	25.9	0.4	0.3	0.1	1.2	0.8	9.4	0.4	3.4	100	1545

something to do: of the men of 65 to 70, for instance, 31% said that they still did paid work for more than 3 hours a day and 11% still did some paid work. Of the women in this age group, 80% were still carrying a full load of housekeeping. The percentages of those who were still active of course dropped rapidly in the successive age groups; for the men from 64 to 30, for the women from 93 to 36. The women's activities consisted in almost all cases of caring for the household; men were responsible for it in only 3-6% of the cases. A number of women (and men too) who were no longer able to keep house entirely or almost alone could still do a great deal of it along with someone else; some of these men and all of these women can be located in the Table in the category: daily, < 3 hours a day, unpaid or practically unpaid work.

The percentage of persons who said that they no longer worked naturally increased appreciably in the successive age groups: for men from 36 to 70, for women from 7 to 64. Of those who reported certain activities (including housekeeping), the nature of and the motive for such activities was considered separately. The results are shown in Table 63 (page 160). Since it became apparent in processing the data that in general (as was to be expected) only a very few aged did heavy physical or mental work, no distinction is made in this Table between light and heavy work, with one exception. Consideration of the results shows that of the men of 65-69 who still worked, 64% did so for economic reasons. In the successive age groups, the percentages are 50, 32, 22, and 20. For women this motive played almost no role of any importance. They were busy with little more than housekeeping (which of course can also depend on financial necessity) and entirely or for the most part did it alone or as helper (this last is included in the category: light physical work by preference). Mental work was done according to their own report by only rather few men (99) and almost no women (6).

Contact with family and friends through visiting; feeling of loneliness and/or feeling withdrawn

Among the old people, as can be seen from Table XX, only a few (36 men and 23 women) never or almost never had *contact* with family and/or friends by means of visits. In the successive age groups there were consistently fewer who regularly received and made visits (men 34-16%, women 46-10%). In the younger groups, regular visit-contacts occurred somewhat less often for men (25-34%) than women (30-46%), which is

Table 63. Nature (physical or mental, light or heavy) and aim (earnings, hobby) of work still performed; by sex and age groups; percentages
Tabel 63. Aard (lichamelijk of geestelijk, licht of zwaar) en motief (verdienste, liefhebberij) van nog verrichte werkzaamheden; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Household work Huishoudelijk werk	Financial gain Economische redenen, om te verdienen		Hobby Liefhebberij		Total Totaal	
		Light physical work Lichte lichamelijke arbeid	Heavy physical work Zware lichamelijke arbeid	Physical work Lichamelijke arbeid	Mental work Geestelijke arbeid	%	abs.
Men/Mannen							
65-69	4.0	41.0	22.9	26.9	5.2	100	227
70-74	10.0	38.1	12.0	34.1	5.8	100	241
75-79	10.5	27.3	4.7	52.3	5.2	100	191
80-84	14.7	21.1	0.9	59.6	3.7	100	109
85 +	9.8	17.1	2.4	70.7	–	100	41
Total/Totaal	9.0	33.0	11.4	41.6	5.0	100	809
Women/Vrouwen							
65-69	85.6	4.9	–	8.6	0.9	100	325
70-74	81.5	2.8	–	15.1	0.6	100	324
75-79	79.6	1.4	–	19.0	–	100	290
80-84	60.7	1.4	–	37.9	–	100	153
85 +	60.0	1.8	–	38.2	–	100	55
Total/Totaal	78.5	2.8	–	18.3	0.4	100	1147

probably related to the fact that these men still did various sorts of work and thus had less time for them.

At advanced age in particular visits were generally more often received than made. For a rather large number, and somewhat more in the older than in the younger groups (men 42-50%, women 31-48%), the contact made through receiving or paying visits was probably not great: less than once a week. This could contribute to feelings of loneliness, etc. In Table 64 a few results on this question are reported in relation to *loneliness* or *withdrawal*.

Table 64. Withdrawn disposition and loneliness; by sex and age groups; percentages
Tabel 64. Teruggetrokkenheid en eenzaamheid; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Not withdrawn, not lonely Niet terug-getrokken, niet eenzaam	Withdrawn, not lonely Wel terug-getrokken, niet eenzaam	Not withdrawn, but lonely Niet terug-getrokken, wel eenzaam	Withdrawn and lonely Wel terug-getrokken, wel eenzaam	Total Totaal	
					%	abs.
Men/Mannen						
65-69	86.9	7.1	4.6	1.4	100	350
70-74	85.5	5.2	5.9	3.4	100	407
75-79	81.6	9.8	4.2	4.4	100	409
80-84	78.9	10.7	7.6	2.8	100	289
85 +	76.0	12.0	7.5	4.5	100	133
Total/Totaal	82.8	8.4	5.6	3.2	100	1588
Women/Vrouwen						
65-69	81.4	4.6	10.6	3.4	100	348
70-74	77.4	7.1	10.9	4.6	100	393
75-79	79.1	6.6	10.3	4.0	100	379
80-84	71.1	9.4	15.0	4.5	100	267
85 +	72.4	9.7	11.0	6.9	100	145
Total/Totaal	77.2	7.0	11.4	4.4	100	1532

It can be seen from this Table that infrequent contact between the aged and their families does not always lead to a feeling of loneliness on the part of the aged. In this study at least, 76-87% of the men and 71-81% of the women reported that they were not withdrawn and did not feel lonely. With increasing age the percentage of those who were withdrawn and did feel lonely increased, more or less according to expectation:

for men from 13 to 24 and for women from 19 to 29. Of the men 6-12% and of the women 14-20% reported feeling lonely and some of these felt withdrawn as well. The latter is self-evidently not the same as the former, although some old people do not feel the difference so sharply. In any case, it can be inferred at least from these results that the great majority of the subjects did not feel themselves lonely. It also appeared that somewhat fewer men than women felt lonely, which among other things is in all likelihood connected with the fact that there were more widows than widowers.

ADJUSTMENT

Relations with spouse

The great majority of the subjects who were still married were of the opinion that this relationship had remained intrinsically the same in recent years. A small proportion (5-10% of the men and 4-10% of the women), mostly among the more elderly, found that relations had deteriorated, but a relatively much larger proportion, mostly from the younger groups, thought on the contrary that they had improved (men: 10-16%, women 14-19%). On this point there was no distinct difference between the sexes.

Death of spouse

An answer was obtained from 520 widowers and 773 widows to a question relating to adjustment to being left alone by the death of the spouse. Among the men, 74% said they had adjusted well, 19% not so well, and 7% poorly. Among the women, these percentages were 81, 13, and 6. Thus somewhat more women than men were able to accept this event, which is not a surprising result. Among the men who had lost their wives before their 65th year, 24% had had difficulty in adjusting. For men to whom this occurred between their 65th and 75th year, the percentage is 27, and for those to whom it did not happen until after the 75th year, 26. For women these percentages are 16, 23, and 23. Women who had lost their husbands before their 65th year thus seemed better able to adjust than the other groups mentioned. This too is understandable.

Living with children or vice versa

From Table XXI it can again be seen that an appreciable number (more than a third) of all the subjects lived together with one or more children.

Of those who had children, less than half shared the housekeeping with them. Having their children live with them or vice versa was usually found agreeable by the subjects, only a small proportion of whom felt indifferent or less favourably about this situation (8-16% of the men and 12-16% of the women involved). There was again little difference between the sexes on this point.

Children's leaving home

A large proportion of the subjects had not liked having their children leave home. Of the 1224 men and 1099 women who could answer this question, 2-8% and 0-3% respectively said that they had been indifferent to this departure. More than half of the men (48-63%) and more than a third of the women (31-45%) had found it normal and proper for the children to leave the parents' house. The departure was found normal but nevertheless "awful" by 21-35% of the men and 33-42% of the women. A small proportion of the men (5-8%) and a rather large proportion of the women (14-21%) had found it terrible that the children were gone; in contrast, 4-6% of the men and women had found it agreeable. In general, the departure of the children had thus affected more women than men disagreeably. In the older groups there was more tendency to consider it normal and proper than there was in the younger groups, perhaps because of the fact that it had happened relatively long ago.

Present living accommodations

Although the results from the question about whether the subjects had been able to remain in their own homes or had had to move would, strictly speaking, belong in Chapter II of the second part of this report, they are given here because this point is an important factor in the adjustment to old age made by elderly people. From Table XXII, then, it can be seen that in the successive age groups consistently more subjects (for men rising from 7 to 44%, for women from 8 to 47%) had found quarters with others, which is very understandable in terms of their frequently declining health. Their new homes were mainly with their children or with strangers, in about equal division. However, as many as 56% of the men of 85 and over and 53% of the women of that age said they had remained in their own homes, but most of them of course did not live there entirely alone or even with only husband or wife.

Relations with children and grandchildren (including step-children and foster children)

In the judgement of the investigating physicians there were good relations with the children and grandchildren in the greater majority of cases. Only 14 men and 9 women reported quarrelling between them and their children. Little or no contact was reported by 1-4% of the men and 0.3-3% of the women among all the subjects questioned on this point. Relations were described as not so good by 6-13% of the men and 5-11% of the women. There was somewhat more report of poor or not so good relations in the older groups than in the younger, a finding which more or less speaks for itself. Relations were considered good by 72-77% of all men and 60-77% of all women. For the remaining men and women the question was irrelevant because they were childless.

Subjective health

Although this question had been put to the subjects earlier in the investigation, it was nevertheless considered useful to ask it a second time for the purpose of evaluating the answers to such a question. It now became apparent that a rather large number of subjects offered a different judgement the second time. Some had become more optimistic about their health, and some less positive. Particularly in the latter case, the investigation itself will have been a factor of importance. It should, however, be taken into account that in a number of cases the examination started with the psychological part. The majority of the subjects, at the moment when the question was put to them for the second time, thought that their health had not recently become worse, although the percentages in each successive age group nevertheless consistently decreased (for men there was a drop from 81 to 61, for women from 74 to 55). By far the greater part of those who thought their health poorer accepted the situation. In view of the fact that the percentage of those who did not do so remained practically the same for each age group, i.e. $\pm$ 4% of the men and $\pm$ 6% of the women, it can be inferred from these data that the younger groups had somewhat less tendency to accept this deteriorated health than the older groups. Somewhat fewer women than men accepted this circumstance.

Of the 1160 men and 993 women who considered that their health had not recently deteriorated, 1075 men and 837 women answered the question of what they thought was responsible for their present good, or at least reasonably good, health. Table 65 shows these results.

Table 65. Factors to which the subjects attributed their present good health; by sex and age groups; percentages

Tabel 65. Factoren waaraan de onderzochten hun huidige goede gezondheid toeschreven; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Quiet, orderly way of living Rustige, geregelde levenswijze	Hard work, active life Hard werken, werkzaam leven	Moderation Matigheid	Nutrition Voeding	Physician, medicines Arts, medicijnen	Constitution, hereditary factors Constitutie, erfelijke factoren	Other reasons Andere redenen	Unknown Niet bekend	Total Totaal	
									%	abs.
Men/Mannen										
65-69	30.5	10.1	3.6	2.0	0.4	6.5	27.1	19.8	100	247
70-74	29.1	7.7	6.0	3.5	3.2	13.0	18.9	18.6	100	285
75-79	29.1	4.7	4.0	3.2	2.9	7.9	20.9	27.3	100	278
80-84	22.8	3.3	10.9	5.5	3.3	11.5	21.9	20.8	100	183
85 +	17.1	1.2	7.3	1.2	2.4	15.9	34.2	20.7	100	82
Total/Totaal	27.4	6.2	5.9	3.3	2.4	10.1	23.0	21.7	100	1075
Women/Vrouwen										
65-69	25.5	3.0	5.5	2.5	6.0	5.5	17.0	35.0	100	200
70-74	24.3	4.6	2.8	2.3	6.9	8.3	22.5	28.3	100	218
75-79	26.9	5.3	3.3	3.8	3.3	8.6	22.5	26.3	100	209
80-84	14.9	5.0	3.5	4.3	3.5	14.2	28.4	26.2	100	141
85 +	15.9	5.8	4.3	2.9	4.3	13.0	30.6	23.2	100	69
Total/Totaal	22.9	4.5	3.8	3.1	5.0	9.1	22.8	28.8	100	837

"A quiet, regular way of living" was given as the most important reason by 17-31% of the men and 15-27% of the women. "Hard work and a busy life" was put forward by 10% of the men of 65-69, but in the succeeding age groups this percentage dropped to 1. For women this answer was given by 3% of the 65-69 year old subjects, in the older groups this percentage rose to 6. The absolute numbers were, however, very small, which also holds for the following data. "Moderation" was mentioned by 4-11% of the men and 3-6% of the women. Diet (by 1-6% of those questioned) and medical attention or drugs (by 0.4-7%) were in general mentioned still less frequently. Heredity, constitution, etc. were, by contrast, somewhat more frequently mentioned (men 7-16%, women 6-14%). The group of "other reasons" was naturally rather large in this limited classification: men 21-34%, women 17-31%. Finally, a large proportion of the men (19-27%) and of the women (23-35%) were unable to answer.

Table 66 gives the results of the question about what the present poor health was ascribed to. Here 328 of the 438 men and 478 of the 539 women whose health had become worse gave a reply. By far the most frequent answer was "old age, wear and tear": 27% (in the youngest group), 55% (group from 80-84), 52% in the group of 85 and over of the men, and 21% (65-69 group) and 62% (85 and over) of the women.

Besides this, "many worries" (0-4% of the men and 2-10% of the women), "having worked hard" (0-13%, the latter figure, however, being that high only for men of 65-69) and loss of spouse (0-4%) played only a negligible role. Other causes which might have been more explicitly described on closer analysis, were mentioned by 25-38% of the men and 20-41% of the women. A large proportion again (perhaps justifiably!) withheld comment (10-21% of the men and 16-24% of the women).

Attitude toward retirement from work

For whatever reason, 34-54% of the 1561 men who answered the relevant question said that at the time when they had had to stop working they would have preferred to continue instead (see Table 67, page 168).

The slightly higher percentages (of those who expressed their opinion) in the older groups are rather remarkable. Probably they are partially the consequence of a reduced ability to judge and the greater financial problems of those involved. It is also possible that a number of those who had been pensioned only rather recently above all (still) enjoyed their "freedom". A proportion of the men, 32% in the 65-69 group drop-

Table 66. Factors to which the subjects attributed their present bad health; by sex and age groups; percentages

Tabel 66. Factoren, waaraan de onderzochten hun huidige tegenwoordige slechte gezondheid toeschreven; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Many worries Veel zorgen	Hard work Hard werken	Old age, wear and tear Ouderdom, slijtage	Loss of spouse Verlies echtgen.	Other reasons Andere redenen	Unknown Niet bekend	Total Totaal	
							%	abs.
Men/Mannen								
65-69	2.9	13.2	26.5	–	38.3	19.1	100	68
70-74	2.6	2.6	42.1	1.3	30.3	21.1	100	76
75-79	3.8	3.8	46.1	3.8	25.0	17.5	100	80
80-84	–	1.4	55.2	–	33.3	10.1	100	69
85 +	–	–	51.5	–	31.4	17.1	100	35
Total/Totaal	2.1	4.6	43.6	1.2	31.4	17.1	100	328
Women/Vrouwen								
65-69	9.5	4.2	21.1	1.1	40.9	23.2	100	95
70-74	6.7	3.3	32.5	1.7	32.5	23.3	100	120
75-79	2.3	5.4	37.2	1.6	37.2	16.3	100	129
80-84	2.2	2.2	47.3	2.2	22.5	23.6	100	89
85 +	2.2	–	62.2	–	20.0	15.6	100	45
Total/Totaal	4.8	3.6	37.0	1.5	32.4	20.7	100	478

Table 67. Opinion with regard to retirement; by sex and age groups; percentages
Tabel 67. Oordeel t.a.v. de pensionering; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Not retired Niet gepensioneerd	Favourable opinion Gunstig oordeel	Unfavourable opinion Ongunstig oordeel	Indifferent Indifferent oordeel	Total Totaal	
					%	abs.
Men/Mannen						
65-69	32.4	28.4	34.3	4.9	100	349
70-74	25.4	27.9	39.4	7.3	100	398
75-79	11.9	27.4	52.5	8.2	100	402
80-84	9.8	27.7	50.6	11.9	100	285
85 +	6.3	26.8	53.5	13.4	100	127
Total/Totaal	19.1	27.7	44.9	8.3	100	1561
Women/Vrouwen						
65-69	86.1	6.1	3.9	3.9	100	330
70-74	72.1	11.5	10.4	6.0	100	364
75-79	67.9	12.0	12.2	7.9	100	343
80-84	40.1	15.9	24.5	19.5	100	220
85 +	29.7	15.3	34.3	20.7	100	111
Total/Totaal	65.8	11.3	13.5	9.4	100	1368

ping to 6% in the 85 and over group reported that they were still actually occupied with a number of activities of importance. In each of the age groups, more than a quarter (27-28%) of the men had found retirement agreeable. No definite opinion was held by 5 (in the youngest group) to 13% (in the oldest group) of the men. Thus in all probability a majority would have preferred to continue working at the time their employment ceased. These results say even more if it may be assumed that among those who were still working there were many who were pleased about doing so.

This question was naturally more difficult for women to answer. For them, housekeeping activity was taken as a starting-point in most of the cases. It then appeared that of the 1368 women who answered, many (although in each successive age group in consistently smaller numbers: 86-30%) considered themselves still to a great extent involved in these and a few other actitivities. These percentages lie consistently higher than those given for the results of the question about whether the individual still worked (Table 62, page 158), which is probably due to a somewhat different evaluation of the partial housekeeping in the question

about the opinion regarding retirement. Very few women had a favourable judgement about stopping housekeeping activities (6-16% of all subjects), more (4-34%) and relatively especially the older ones, would have preferred to have continued.

Support from religion in difficulties

An appreciable number of the subjects, increasing only a little in percentage with rising age, thought that in case of difficulties they found spiritual support in their religious beliefs (men 41-48%, women 59-69%). There were thus more women with a religious tendency than men. This is also to be seen in the following data. Of the men, 47-53% said they needed no support in difficult circumstances and, in contrast, of the women only 24-34%. The numbers of those who found other support were only small (55 men and 56 women) and of those who did require spiritual support but who had not found it, even smaller (35 men and 51 women). To what extent these results actually reflect reality of course remains a question.

FEELINGS ABOUT BEING OLD

Subjective physical old age symptoms

A small proportion of the subjects reported not having noticed any particular signs of old age (see Table 68, page 170). This number was naturally largest in the youngest groups: for men 22%, for women 21%, dropping steadily in the successive age groups to 11% and 9% respectively in the oldest group. One of the most important signs mentioned was becoming tired more quickly; relatively more such complaints came from the younger than the older individuals for whom other old age symptoms began to play a relatively larger role. Of the men, 16-25% and of the women 17-32% reported the last-mentioned sign. Walking less well was also rather frequently taken as a sign of aging, and following expectation especially by older subjects and somewhat more by women than men: for the former the percentage rose from 5 to 18 and for the latter from 10 to 22. A number of other apparently obvious symptoms were seldom mentioned: only 46 men and 40 women mentioned slowing-up; 6 men urinary difficulties; 35 men and 24 women growing hard of hearing; 44 men and 41 women visual disturbances, and 48 men and 45 women poor memory. A large number of subjects (36-42% of the men and

Table 68. Subjective physical symptoms of old age; by sex and age groups; percentages

Tabel 68. Subjectieve lichamelijke ouderdomsverschijnselen; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	No symptoms observed Geen verschijnselen gemerkt	Sooner tired Eerder moe	More difficult walking Minder goed lopen	Tempo slower Tempovermindering	Micturition abnormalities Mictiestoornissen	Hearing abnormalities Gehoorstoornissen	Eyesight abnormalities Visusstoornissen	Memory abnormalities Geheugenstoornissen	Other symptoms Overige verschijnselen	Total Totaal	
										%	abs.
Men Mannen											
65-69	21.7	20.5	5.0	4.4	0.6	1.5	3.8	2.6	39.9	100	341
70-74	21.1	24.2	6.6	3.1	0.5	1.5	2.0	4.1	36.9	100	393
75-79	15.2	25.4	13.5	2.5	0.3	2.0	2.8	2.5	35.8	100	394
80-84	14.1	16.2	15.2	2.2	0.4	3.6	3.6	2.9	41.8	100	277
85 +	11.3	17.7	17.7	2.4	–	4.8	1.6	4.0	40.5	100	124
Total Totaal	17.7	21.7	10.5	3.0	0.4	2.3	2.9	3.1	38.4	100	1529
Women Vrouwen											
65-69	20.5	31.8	10.4	2.1	–	0.3	2.4	2.7	29.8	100	336
70-74	15.7	30.2	11.3	2.9	–	1.3	2.4	2.1	34.1	100	381
75-79	12.9	26.0	13.7	3.3	–	1.6	2.2	3.0	37.3	100	365
80-84	11.7	17.0	18.2	1.6	–	3.2	4.5	5.3	38.5	100	247
85 +	8.5	19.2	21.5	4.6	–	3.1	3.8	3.1	36.2	100	130
Total Totaal	14.8	26.3	13.8	2.7	–	1.6	2.8	3.1	34.9	100	1459

30-39% of the women) mentioned many other subjective signs of aging, some of which had a pathological cause.

More than 1/4th of the men (25-32%) and more than 1/3rd of the women (31-40%) had found it disagreeable to notice these changes (see Table XXIII). The percentage of those who had noticed no important changes agrees rather well with that mentioned in Table 68 (page 170) for subjects who said they had noticed no changes at all. At least according to what they said, the majority of the subjects seemed to have found aging no problem (for men 46-61%, for women 46-56%; among older subjects this was more the case than among the younger ones; probably having been old longer had a certain effect on this judgement).

Only a very few had done or had had anything done about these signs of old age. Of the 1431 men who answered the relevant question, 2 said they assumed a youthful manner, 1 said he had dyed his hair, and 50 had resisted aging in other ways. These figures for 1419 women were 1, 10, and 41 respectively. Thus of the 2850 individuals questioned, only a scant 4% did anything about signs of aging.

Friends still living

From the answers obtained from 1530 men and 1448 women, it was clearly evident that especially the oldest had had the feeling of having been left alone because the majority of their friends had died. The percentage of those for whom this was the case was: for men in the successive age groups 37, 54, 75, 89, and 89; and for women 29, 58, 76, 87, and 91.

Having attention paid to their advanced age

The large majority of the aged examined had no objection to having their age recognized by others by, for instance, giving up a seat in tram or bus, or were indifferent to it (see Table XXIV). As could be expected, it was especially the youngest who found this least agreeable; for (1559) men the percentage dropped from 20 to 5, for (1500) women from 15 to 7 (only the oldest group showed a higher percentage). The percentage of those who had no objection rose from 48 to 70 for the men, but for the women it was more or less constant (56-62) in all age groups. The women thus had, at least as far as this point was concerned, established their attitude somewhat earlier than the men, and the older ones differed little from the younger in their attitude on this question.

CONCEPTION OF THE PLACE OF THE AGED IN SOCIETY

Attitude towards assistance from others

The great majority of the subjects said that they were still permitted to do everything they were accustomed to do, even though this number of course decreased distinctly with increasing age (for men from 88 to 53%, for women from 85 to 40%, see Table XXV). The lower percentage of women who still did everything themselves is at first sight somewhat remarkable. However, in all probability many women meant by "still do everything themselves" that they themselves still did all or most of the housekeeping. Seen in this light, it is thus understandable that relatively more men than women were still permitted to do everything.

Only a very few subjects (43 men and 48 women), and then especially among the oldest, were of the opinion that much or everything had been taken out of their hands unjustifiably. The others, increasing rapidly in number with age, found it justified (men 11-41%, women 13-51%).

The value of old people to the community

It is obvious that the answers to the questions on these points in this study must again be regarded with many reservations. The questions were meant only to obtain some idea of the situation, and more should not be expected of the results. Also, many of the subjects understood this sort of question either not at all or only barely. Rather many of them had a negative judgement concerning the value of their existence to the community (see Table XXVI). In the older age groups this was more the case than in the younger groups, and among the men more than the women. The percentage of those who said their existence had no value rose for 1306 men from 15 to 30 and for 1273 women from 9 to 23, the equivalent percentages of those who considered their existence of only little value were 10-15 and 7-9 respectively. Three men and 6 women thought that it would be better if they died soon.

Nine to 11% of the men and 18 to 28% of the women said they were still able to be of help to their children. Of those who answered this question, a part (decreasing in number with age) derived their sense of value about their existence from helping others (for men the percentage dropped from 33 to 19, for women from 43 to 22). An appreciable part of the younger men considered their own activities still valuable (65 through 69 years: 17%). Rather many could not think of an answer (men 14-26%, women 14-25%).

Membership in clubs and associations

Of the men 403 and of the women 874 said they had never been a member of one or more associations. In the older groups there were many more who had never been members than in the younger: for men the percentage rose from 19 to 36 and for women from 51 to 70. A large proportion of the subjects had previously held such membership, but no longer did so at the time of the study (men 24-37%, women 15-22%). In the successive age groups, a consistently declining percentage of men (from 28 to 15) and women (from 24 to 11) were still members, but had never been on the Board of such an organization. Fourteen to 17% of the men and 2-4% of the women had been Board members. At the time of the study, the percentages of those who were still members and Board members were 13, 8, 4, 2, and 2 of the men and 1, 2, 0.3, 0 and 0 of the women.

Further information about the sort of societies of which they were still members could be obtained from only some of the individuals: 453 men and 272 women. Almost 1/3rd of these men (the percentages in the separate groups lay between 20 and 41) and almost 1/6th of these women (10-27%) were members of an old peoples' association or club. Membership in church organizations was held by more people in the older than in the younger groups, and by more women than men. Of the women of 65-69, at least 59% were members of a women's association; this percentage, however, dropped rapidly to 7 in the group of 85 and over.

Eleven men were members of fishing clubs, 22 men and 8 women of neighbourhood and district associations, and 12 men and 2 women of card clubs (this number was probably larger). Finally, 177 men and 31 women were still members of other sorts of societies.

Looking back on their lives

More than half of the subjects who answered the question (52-60%) said they were satisfied when they looked back at their lives (see Table XXVII). One-fifth (19-24%) even considered their lives to have been a success, but 10-20% of the 1465 men and 12-16% of the 1384 women, although not dissatisfied, would have liked to have lived their lives over again differently! There was in general little difference between the sexes, although the women were perhaps slightly less favourable in their judgement than the men. Only a few had a negative opinion of their lives: 18 men and 36 women said they would under no circumstance want to

relive them, and 71 men and 93 women considered their lives failures but would relive them if they could do so in another way.

Opinion of present-day society

In each age group of the 1550 men who gave an answer, just about the same number of persons (44-45%) thought that society was at present better than in the past. Almost as many were, however, of the opinion that it was worse now (36-43%). The rest of the men thought that there was no important difference to be detected. The 1435 women who answered did not greatly differ in their opinions from the men; the percentages were 34-46, 32-45, and 18-23.

Opinion of present-day youth

Both sexes were also in almost complete agreement in their opinion of modern youth, and in most cases that opinion was not very favourable. In general the aged in the younger groups were mildest in their judgement of the youth of today: of the 1336 men from whom some sort of answer was obtained, the 65-69 year group had 21% who found youth the same as formerly and 11% who found it better, but of the group of 85 and over it was only 11% and 6% respectively. For women these percentages were, in the youngest group 19 and 9, and in the oldest 17 (but in the 80-84 group, 13) and 3. A fourth of all those questioned found modern youth too insolent, mischief-making, and rowdy; and more than a fourth thought them generally worse than in the past. They were also found to be often rather too free in their behaviour (in more than 10% of the cases). All in all, what we have here is only another illustration of the fact that the oldest generation seldom has a very high opinion of youth.

THE MEMORY TEST

The results of the various sub-sections of the memory test will be reported first.

A. Orientation

The first three questions, concerning name, age, and date of birth, were of course correctly answered by very many of the subjects, although in the older groups especially rather many women ($\pm$ 26%) were unable to

answer one or more questions, as can be seen from Table XXVIII. In the Groningen study, which used the same memory test, especially the answering of the question as to birth date seemed to form a difficulty, in particular for women. None of the questions was answered correctly by 4 men and 10 women, while 15 men and 35 women could answer only one question. In the group of 80 and over, significantly more women than men had poor results.

Appreciably larger numbers of subjects than in the Groningen study could not answer one or more questions pertaining to general orientation (Who is the head of the kingdom of The Netherlands? Who will succeed? Who is mayor at present?). For the men, the percentage rose from 19 in the youngest group to 54 in the oldest, and for women from 22 to 58 (see Table XXIX). In almost every group there were relatively consistently somewhat more women than men who could only answer correctly 2, 1, or even none of the questions. There was thus no great sex difference here, but once again a distinct age effect. The results from this section per separate age group did not differ significantly from those obtained in the Groningen study.

The answering of the questions having to do with orientation in time, on the other hand, gave better results (see Table XXX). For men there was a rise in the percentage of those who could not answer one or more questions from 5 to 24, for women from 11 to 40. It was again especially the older groups, and especially the women (80 and over) who had difficulty with these questions. Thirty-three of the men and 36 women could not give a correct answer to any of the questions; and 33 men and 61 women answered only 1 correctly. There was some small difference from the results of the Groningen study, inasfar as in that investigation relatively fewer subjects and especially the oldest and more women than men answered 1 or 2 questions correctly. The number of those who could not answer any of the questions, however, differed little.

Orientation in place gave relatively very little difficulty: these questions may have been of an even simpler nature than the preceding ones. For the men in the successive age groups the percentage of those who could not answer one or more questions correctly rose from 0.3 to 11 (in the 80-84 year group it was, however, still only 5), for the women from 1 to 22 (in the 80-84 year group it was 14, in the 75-79 group only 5). Five men and 12 women answered none of the questions correctly, only 1 of the questions was answered correctly by 10 men and 19 women, and 2 questions by 33 men and 71 women.

Again it was especially the older subjects, and once again particularly

the women, who failed. Here the same tendency could be seen as in the results of the Groningen study, which were also evident in the preceding point; in that study the percentages of those who had answered one or two questions correctly were lower by about half than in the present T.N.O. investigation. In both cases, however, it must be taken into account that the absolute numbers were rather small and the percentages have therefore only a relative value.

Reciting the alphabet. The alphabet was recited by 1561 men and 1496 women. Of the men in the successive age groups, this was done without mistakes by 79%, 72%, 72%, 63%, and 63%, and of the women 82%, 74%, 70%, 56%, and 61% respectively. (These results were, particularly in the younger groups, somewhat worse, i.e. 1-8%, than in the Groningen study.) Thus we have a declining percentage of good results with increasing age, and in general little difference between the sexes (as in Groningen).

Simple counting and arithmetic. Table XXXI shows the results of simple counting from one by threes (1-4-7-etc.); 38 men and 50 women did not take this test. Of those who were 80 or over, only about half the men and 2/5ths of the women were able to do this without error. Taken as a whole, distinctly more men did better than women, although the difference in each separate age group was not consistently significant. (The results were again slightly less favourable than in the Groningen study, but otherwise agreed rather well with it.)

A simple arithmetic problem involving sums of money was incorrectly solved in the successive age groups by 4%, 5%, 10%, 16%, and 25% of the men and 7%, 12%, 15%, 28% and 37% of the women. Especially the oldest subjects thus seemed to have a great deal of difficulty with these sums and the women consistently more than the men; the difference between the group of men and the group of women is significant. (In this case the results were somewhat poorer than in the Groningen study, although the differences were not great.)

Results of the first fifteen questions. Only a few subjects refused to answer the first 15 questions of the memory test. As a result, one or more of these questions were unanswered by 5, 7, 5, 13, and 10 men and 5, 7, 11, 16, and 14 women in the successive age groups respectively. Those who refused, therefore, were primarily members of the older groups. Of the total of 106 who refused, 16, 15, 19, and 2 persons respectively never-

theless achieved 12, 13, 14, and 15 points. This confirms the impression formed during the investigation that rather many subjects only refused to answer either one or only a few questions.

Of those who did answer all the first 15 questions, the maximum number of points (16) was achieved by 51, 43, 36, 24, and 18% of the men and 40, 37, 31, 19, and 19% of the women, respectively, in the successive age groups. A total of 15 points was made by 21, 25, 25, 22, and 21% of the men and 30, 23, 17, 14, and 15% of the women. More than 8% of the subjects made only 10 points or less. These few figures show that these 15 questions were in general reasonably well answered. Most of them were also of a very simple nature.

Repetition of a story. A maximum of six points could be obtained by complete or practically complete repetition of a little story which was read aloud slowly once, one point being given for each group of about 4 words (i.e. 2 points for 6, 7, 8, or 9 words or groups of words), the entire story being made up of 24 divisions.

Some form of answer to this auditory memory test was obtained from 1488 men and 1410 women. Of these totals, however, 38 men and 44 women partially refused to co-operate. The 115 men and 136 women for whom nothing at all was noted probably also included refusers. The eldest refused co-operation relatively the most.

It can be seen from Table XXXII that (just as in Groningen) relative to percentages, the value of 2 points is almost consistently most frequent (for 21-33% of the men and 25-34% of the women). The values for women were in general again somewhat more on the low side. There were, however, 3 women, and, in contrast, no men at all, who achieved 6 points. The younger subjects were able to repeat appreciably more than the older ones.

The mean of the numbers of points achieved on this part of the memory test were in the successive age groups for men 2.5, 2.4, 2.1, 1.8, and 1.3, and for the women 2.4, 2.3, 2.1, 1.6, and 1.4. (The standard deviations were 1.2, 1.2, 1.2, 1.2, and 1.1, and 1.1, 1.2, 1.2, 1.2, and 1.2.) These values, low as they are, agree very reasonably with those found in Groningen, but they do lie slightly lower.

Drawing two configurations from memory. Just as in Groningen, the results of the visual memory test agreed in many aspects with those from the test of auditory memory. A maximum of 4 points could be achieved, 2 points for correctly or almost correctly reproducing each of two

configurations from memory after having had approximately one minute to look at both simultaneously. For 1514 men and 1403 women some sort of answer was obtained, but among these were 25 men and 48 women who refused to co-operate. There was more resistance on the part of the older subjects, and especially among the women.

Here, too, as in the Groningen study, better results were obtained with drawing from memory than with oral repetition. Many subjects, although the number dropped with rising age and was appreciably smaller for women than men, were able to make 4 points (in the successive age groups: men 49-19%, women 32-10%) (see Table XXXIII). Just as has been remarked with regard to the results of the Groningen study, it is a question whether it may be inferred from these results that visual memory remains intact better than auditory memory. It may be that the visual test was relatively somewhat simpler than the auditory test. Nevertheless, the number of persons who were unable to make any points at all was still appreciable, especially in the older groups (for men the relevant percentage rose from 8 to 35, for women from 17 to 49!).

The mean of the number of points made in reproducing the two figures from memory again agreed nicely with those of the Groningen study (they lay approximately 0.1 point higher). For men they were in the successive age groups 2.9, 2.7, 2.3, 1.9, and 1.7 (standard deviations 1.3, 1.3, 1.5, 1.5, and 1.5) and for women 2.4, 2.1, 1.9, 1.3, and 1.1 (standard deviations 1.5, 1.5, 1.4, 1.5, and 1.4).

Results from the entire memory test. Classifying the subjects into three groups according to the number of points achieved (i.e. 0 through 15 points, 16 through 18, and 19 through 26) gives the results shown in Table 69. Consideration of this Table shows that the percentage of persons who made 19 or more points rapidly decreased with rising age, from 76 to 32 for the men and from 69 to 26 for the women. These figures also show that in general fewer women than men achieved good results. It was nevertheless two women, from the age groups 65-69 and 80-84, who had a perfect score of 26 points.

In the successive age groups 5, 8, 2, 1, and 0 men and 5, 4, 2, 0 and 0 women were able to make 25 points. Twenty-four points were achieved by 59 men and 39 women. (Of the 3000 subjects in the Groningen study 1 man and 2 women achieved a perfect score and 20 men and 9 women made 25 points.)

Table 70 (page 180) gives the mean, median, and modus of the numbers of points achieved by all subjects who tested their powers on all sections of

Table 69. Total number of points obtained on the memory test; by sex and age groups; percentages

Tabel 69. Totaal aantal punten behaald in de geheugentest; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Men/Mannen					Women/Vrouwen				
	⩽ 15 points ⩽ 15 punten	16-18 points (inclusive) 16 t/m 18 p.	> 18 points > 18 punten	Total Totaal		⩽ 15 points ⩽ 15 punten	16-18 points (inclusive) 16 t/m 18 p.	> 18 points > 18 punten	Total Totaal	
				%	abs.				%	abs.
65-69	7.1	16.8	76.1	100	310	9.2	21.9	68.9	100	305
70-74	9.5	18.6	71.9	100	377	14.0	25.0	61.0	100	349
75-79	16.8	20.9	62.3	100	363	20.1	32.1	47.8	100	318
80-84	26.1	27.7	46.2	100	253	44.4	26.4	29.2	100	216
85 +	34.9	33.0	32.1	100	109	48.6	25.2	26.2	100	107

Table 70. Mean, median and mode of the total points obtained by those who completed the whole memory test; by sex and age groups

Tabel 70. Gemiddelde, mediaan en modus van de aantallen punten, behaald door hen, die de gehele geheugentest hebben afgewerkt; per geslacht en leeftijdsgroep

Ages Leeftijd	Mean Gemiddelde	Median Mediaan	Mode Modus	Number of persons Aant. pers.
Men/Mannen				
65-69	20.3	20.5	22	310
70-74	19.8	19.7	21	377
75-79	18.7	19.0	21	363
80-84	17.3	17.5	19	253
85 +	16.0	16.2	16	109
Women/Vrouwen				
65-69	19.6	19.2	20	305
70-74	18.9	18.7	19	349
75-79	17.9	18.0	17	318
80-84	15.5	16.0	17	216
85 +	14.1	14.2	19	107

the test. The figures differ little from the results of the same investigation in Groningen: the means for the T.N.O. study in general lie only a few tenths of a point higher than those for the Groningen study. These results again show that the youngest group of both men and women achieved significantly better results than the oldest group. Men again did distinctly better than women.

Finally, all these results indicate that almost consistently in the groups over the 80th year markedly far fewer of the old people were able to achieve reasonably good results than in the preceding groups.

CHAPTER VII

RESULTS CONCERNING COMBINED DATA

A. SUBJECTIVE JUDGEMENT OF HEALTH AND THE PHYSICIAN'S OPINION OF THE PHYSICAL CONDITION IN RELATION TO VARIOUS FACTORS AND CIRCUMSTANCES

As noted in the first part of this report, a strict limitation was required in the combination of the various data. A series of combinations was therefore selected to give some idea of the factors which might have influenced the health of the subjects. It was originally intended to combine only the answers on the point concerning the physician's opinion of the physical condition and the results of other questions of more general import. Since, however, the physician's opinion of the subject's physical condition (usually abbreviated to *objective health*) and the subject's subjective judgement of his own health (usually *subjective health*) frequently disagreed, it was necessary to combine the physician's impression with the subject's judgement. As the results have already shown, the subject's answer to the question of whether he felt himself to be healthy rather frequently differed the second time it was given from the first answer. There are some grounds for thinking that the second answer is more reliable than the first because the investigation itself has caused the subject to be more realistic about his health. At the same time, other factors may have had an adverse effect on the reliability of the second answer (greater emotional tension, more fatigue). It thus seemed best to choose something between the two answers, in the sense that when both replies were "good" the subjective health was rated "good", when "poor" was given either once or twice it was rated "poor," and that one "good" and one "not so good" or two "not so good" were rated "not so good." It must also be kept in mind that the term "good subjective health" here can mean not only that the subject actually felt well but also that he was a person who does not easily complain.

To avoid overcomplication and reduce the amount of detail in the

Tables, the age groups were reduced to two main groups, one of 65 through 74 years and the other of 75 years and older.

The following part of the report deals with the problem of whether certain factors are correlated with the judgement of the subject about his health or with the investigator's impression of it. The data obtained are considered only in terms of their mutual relationship because it would not be justified to compare them with the results of simple frequency distributions by sex and age group since the latter distribution was used in arriving at the results to be discussed here. For the same reason, this part of the text contains in general few percentages.

Occupation

The first social factor chosen was occupation. Table XXXIV shows that in general there is little disparity in the percentage distributions by occupation in the groups of those whose physical condition was rated as good or reasonably so by the examining physician and of those for whom it was considered not so good. In only a few cases is the difference between the corresponding percentages more than 4, but only in the group "professions, intellectuals" for women of 65-74 is this difference significant in the sense that proportionally there are distinctly more women in the group with an objective good health rating (10%) than in the group with an objective not-so-good rating (3%). The groups of labourers according to age and sex showed proportionally the most, somewhat larger, differences, but these are not of much statistical importance and, in addition, in the successive age groups the differences are of the opposite nature (for instance, for men of 65 through 74 with an objective good health the percentage is 43 and with a not-so-good health it is 48, while these percentages for men of 75 and over are 49 and 44 respectively). The percentages in the groups with an objective rating of poor health apply to very small absolute numbers; the only thing that can be said of them is that they may offer supportive evidence of a certain tendency in a few occupational groups, such as the agricultural-managerial (farmers, etc.). The only conclusion to be drawn from this material is that there is no clear relation between the (principal) occupation previously or still exercised and the objective health condition.

An even less suggestive picture is formed by the results of combining subjective health and occupation. Here there is even less relation between the two groups of data than between occupation and objective health.

In other words, the (previously exercised) occupation was not to any important extent related to the subjective health of the people examined.

Socio-economic standing

Table XXXV indicates that in each group according to age and sex in the lowest economic bracket (incomes approximating the payments under the Old Age Pensions Emergency Act) relatively more persons had an objective rating of not-so-good than good health, and that the reverse holds for the representatives of the highest economic bracket (incomes above *f* 3000 per year). Only in the group of men of 65-74 years were the differences significant, however (lowest economic bracket: investigator's opinion of the physical condition of the examinee: good, 15%; not-so-good, 27%; highest economic bracket: good, 35%; not-so-good 20%). The differences in the group with an annual income lying between the O.A.P.E.A. payment and *f* 3000 were usually of little importance and, in addition, of the opposite nature in the two age groups.

The percentages of persons with an objective poor health apply only to very small numbers of subjects, but in each of the four groups (according to age and sex) in the lowest economic bracket they are higher than the equivalent percentages of persons with an objective good or not-so-good health. This to some extent supports the impression that the group of persons with the lowest incomes comprised relatively more aged in an inferior state of health than did the group with the highest incomes. The combination of the subjective judgement of health with the socio-economic standing gave approximately the same picture. Thus a correlation was found between the economic standing and the objective opinion of the physician and between the economic standing and the subjective judgement of the aged subject, and these factors correlated in almost the same way.

Marital status

As can be seen from Table XXXVI, marital status seemed to have had little influence on the objective health. It can only be remarked that those who had remained unmarried were perhaps relatively somewhat more often rated not-so-good than good, and also that for those who had been married this tendency was a little more clearly present in the older group of men and the younger group of women; and, finally, that of

those who were still married, the opposite could be observed in most cases; in the group of those with an objective good health there were relatively more married persons than in the group of those whose health was rated as only fair (in the older group of men the two percentages even differed significantly, being 52 and 40). The married state may thus have a somewhat favourable effect on the physical condition in old age. This is a conclusion which to some extent points in the same direction as the fact that the average lifespan of married persons is somewhat longer than that of unmarried or no-longer married persons. There was practically no correlation with the subjective judgement of health, the differences in the age groups were in each case even of a contrary nature.

Character of the place of residence

Although Table XXXVII indicates little correlation for this factor, i.e. between the type of place where the subject lived (and may perhaps have lived for a great part of his life) and his objective health, nevertheless the run of the percentages in this case was somewhat more suggestive than in the previously mentioned points. This is meant in the sense that in the group of those whose physical condition was rated favourably by the physicians there were rather consistently more rural people than in the groups of those who had made a not-so-good or poor impression, and that the reverse was true of inhabitants of urbanized rural areas and large cities.

Rural life may thus perhaps have had a somewhat favourable (or somewhat less unfavourable) effect on health than life in or near towns and cities. The reverse explanation, that more people were born with a good constitution in the country and had remained living there is, however, also possible.

The above correlation is even somewhat clearer in the combination with subjective health (there was even a significant difference for the percentages of country people in the older group of men and younger group of women with subjective good health and those of country people with not-so-good health: relatively more rural people were in the group with good health than with not-so-good health. The percentages were 60 and 48, and 61 and 47, respectively. This could mean that more aged country people feel healthy than aged city people, and on the basis of this supposition, rural living might also promote the subjective wellbeing slightly more than the objective health.

Last medical treatment

As could be expected, there was a clear-cut difference between the percentages of those subjects who had been under doctor's care during the three months preceding the examination in the groups with objective good health and in those with not-so-good or poor objective health (see Table XXXVIII). Of the men who in the physician's opinion were in not-so-good health, more than 60% had been under medical treatment in the preceding three months, and for the women this percentage was even over 70. For the (small) number of men with objective poor health, the relevant percentage was between 77 and 91, and for the same group of women, between 91 and 100. The difference between the sexes with regard to this point was, however, even greater in the group of objectively healthy persons, but rather many of those with not-so-good health (74 men and 72 women) and even a few with health rated as poor (3 men and 1 woman) had nevertheless already gone more than a year without consulting a physician.

The connection between not-so-good or poor subjective health and recent consultation of a physician was even clearer, since there was a still greater difference between the percentages of those who had had medical care within the preceding three months in the groups of those who felt well and those who did not. Almost 3/4ths of the men with not-so-good subjective health and more than 3/4ths of the women in that state had been to the doctor in the preceding three months. For the men who considered their health poor, the percentages were 82-91, and for the women (but in reverse age sequence) 82-98. In this last category there were nonetheless 2 men and 1 woman who had not been to a doctor in more than a year. For those who did not feel too well, the relevant figures were for men 41 and for women 55.

Use of alcoholic liquors

Table XXXIX contains the data obtained by combining the objective health with the use of alcoholic drinks during most of the adult life. A distinction is made here between those who never or almost never drank, those who did so to a limited extent (less than 11 units per week; see questionnaire), and those who took more than this amount. Consideration of this Table shows little connection between the consumption or non-consumption of alcohol during a greater part of the life and the objective health (or of the reverse effect). At the most it can be said that

there was a certain tendency among the older group of men for those who had taken no alcohol to make a relatively somewhat more healthy impression than those who were in the habit of taking a rather large quantity. The percentages of those who had never taken alcohol in the group with objective good health (61) and in the group of objective not-so-good health (55) and the percentages of those who had in general consumed rather a lot of alcohol in these two categories (13 and 20 respectively) did not, however, differ significantly.

The same conclusions hold for the combination of subjective health with the use of alcohol: neither consumption nor abstinence had any important effect on the objective health and the subjective sense of well-being (a proportion of heavy drinkers may, however, have died!). Conversely, the objective and subjective health showed no important connection with the consumption or non-consumption of specific quantities of spirits.

Use of tobacco

No connection could be established on the basis of the data provided by this investigation between smoking and health or between health and smoking habits. Examination of Table XL in which the objective health is combined with the factor of whether the subject had smoked for the greater part of his life: not at all, moderately (less than 15 grams per day: see questionnaire), or heavily (15 grams or more) indicates that percentually there were approximately just as many non-smokers among the objectively and subjectively healthy men as in the groups of objectively and subjectively not-so-healthy men and as in the groups of men in objectively and subjectively bad health. The same holds to some extent for the light smokers and for the heavy smokers. Here too, the possibility should be kept in mind that a proportion of the heavy smokers were already dead. Among the younger group of men there were relatively somewhat more non-smokers (18%) and relatively somewhat fewer heavy smokers (29%) in the group in not-so-good objective health than in the group of objective good health (respectively 14 and 34%)! The differences, however, are not important. The numbers in the group of younger men with bad health might indicate a correlation with considerable smoking if they were not too small in absolute numbers to provide grounds for reliable conclusions.

Use of alcohol plus tobacco

In view of what has been reported concerning the separate effects of alcoholic liquor and smoking during a large part of the lifetime on health (or vice versa), it will cause no surprise that – at least according to Table XLI – no clear-cut "effect" of a combination of the two on the objective or subjective health of the men examined could be established. (Or, in reverse, of health on smoking or drinking habits.) Among the younger men in the group with not-so-good objective health, the percentage of those who had neither taken alcoholic drinks nor smoked was greater (15%) and that of those who had done both was lower (39%) than in the group in good health (11 and 40%!), but not to a significant degree. Just the reverse was the case for the older group of men. Taken as a whole, it cannot be concluded from these figures either that having abstained from alcohol and tobacco had led to a better physical condition or better subjective health in old age than when both were indulged in, or, just as little, that health affected smoking and drinking habits to an important extent.

It must be explicitly kept in mind that these results apply only to the connection between smoking and drinking on the one hand and health taken as a whole on the other. They do not exclude the possibility that certain aspects of health do show a correlation with smoking and drinking.

Residence in the tropics

The percentages of persons who had spent some period in the tropics (whose actual number was small) in the group of those whose physical condition was considered good by the examining physician and in the group of those whose condition was considered not so good, showed very little discrepancy. The difference amounted to 0.2-2.3%. The same holds for subjects with a subjective good or not-so-good health, where the difference amounted to 0.9-2.3%. From these results it cannot be concluded that a period in the tropics had been unfavourable for the health of those examined. But here too, there is a possibility of selection by which those who had been most adversely affected by a stay in the tropics were already dead. It must also be recognized that it was certainly not the least healthy who went to the tropics.

Condition of the teeth

With comparison of the objective health of persons with 1) good or not so good teeth; 2) bad teeth (or with neither teeth nor denture), and

3) a denture, it can be seen from Table XLII that the percentages of persons from the first and last categories in the group of those whose physical condition was rated as good are consistently higher than in the group of those whose condition was considered not-so-good. Just the opposite is the case for the category of those who had bad teeth or none at all. In some cases the relevant percentages even differ significantly, so that it may be cautiously concluded that an objective not-so-good health and teeth in bad condition or missing altogether without having been replaced by a denture frequently go together. This fact has actually long been known. It would therefore be of interest to investigate whether a complete overhaul of the teeth and the provision of dentures would markedly benefit the general physical condition of the aged.

This situation, of some degree of connection between a not-so-good general condition and bad teeth, was much less clear in the combination of subjective health and the condition of the teeth. This implies that the sense of personal well-being depended very little on the condition of the teeth.

High blood pressure

The criterion for (too?) high blood pressure was taken as a diastolic tension of 100 mm. Hg. or higher plus a systolic pressure of 160 mm. Hg. or higher. It can be seen from Table XLIII that in all four groups the percentage of those with high blood pressure lies higher in the group with not-so-good health than in the group of those whose physical condition was rated good. The two percentages in no case differ in a significant sense, however. Among men the tendency was somewhat strengthened by the still higher percentages (which, however, apply only to very small absolute numbers) in the group of those in bad physical condition. This was, however, not the case for the women. Taken as a whole, it can perhaps be said that high blood pressure and inferior objective health showed some degree of connection.

Concerning the combination of high blood pressure with subjective well-being, no real connection appeared; the percentages of those with high tension in the group with not-so-good subjective health lie only slightly higher (for men) or even somewhat lower (for women) than in the group of those who considered themselves in good health. Thus only the physical condition considered by the physician to be not so good shows some slight connection with the presence of high blood pressure.

Feeling bored

In considering the results of the combination of the state of health with the presence of the feeling of being bored, as reported in Table XLIV, a certain connection between such feelings and inferior health is immediately striking. The percentage of those (with exception of the men of 75 and over) who were bored either occasionally or regularly is consistently appreciably higher in the category of aged with objective not-so-good health than in the category of persons whose physical condition made a favourable impression on the examining physician. The percentages of persons with bad health who were bored are almost always still higher, and thus support this conclusion. A causal relationship may be assumed, probably in the sense that those whose physical condition was still good were more able to be active, so that they had less chance of being bored than those whose present health was not considered so favourable.

In more or less the same way, subjective inferior health was accompanied by more boredom. It naturally remains a question whether especially in this last case the causality is not to be sought in just the reverse direction; those who were more bored may have therefore felt less healthy.

Favourite pastimes

More or less parallel with the presence of boredom, there often went the absence of hobbies and favourite pursuits. It could thus be expected that the percentages of those without these pastimes would be higher in the group whose physical condition was rated not-so-good than those in the group of objectively healthy subjects. Table XLV indeed gives this picture, even though the differences between the former and the latter percentages are usually not significant. The percentages of subjects in objective bad health, however, consistently support the main trend of the results. Here again it will have been the case that the healthy subjects had more chance to spend time on a favourite pastime than the less healthy; conversely, however, keeping busy may again have improved health. The results of the combinations of subjective well-being with the presence or absence of favourite pastimes differ too little from the results just mentioned to require further comment.

Employment

To a still greater extent than for the two factors just discussed, there was a detectable connection between health and the amount of employment.

Table XLVI shows that in each of the four groups the relative number of those who no longer did any work was consistently much smaller in the category of objective good health than in the category of objective not-so-good health, and even much smaller than in the (small) group of those in bad health. The drops in the percentages of the category of good health towards that of not-so-good health are also of relatively the same magnitude in the groups of men who were only employed a few days a week and those who still had daily employment, so that objective health is evidently not dependent on the smaller or greater degree of activity. The interpretation is probably once again that those who are in good health are more able to work than those whose health leaves something to be desired.

The combination of subjective health with employment gives more or less the same picture. Here too it can of course be asked whether it is just the limited activity in itself which leads to a reduced sense of well-being, or conversely, a certain amount of activity promotes subjective (and perhaps also objective) health. Further investigation of the nature of this connection is most important, if only from the point of view of prevention.

Loneliness, withdrawal

Table XLVII clearly shows that consistently the percentages of those who had neither withdrawn into themselves nor felt themselves lonely was appreciably higher in the category of the objectively healthy than in that of those in objectively not-so-good health. Here again there are two possible explanations for a causality; for example on the following simplified basis: those who are healthy get these feelings of frustration less, or those who can adjust themselves retain better health. And here too the need for further research is self-evident. Combination of subjective health with loneliness or withdrawal was not suggestive of any important differences, so further comment is unnecessary.

Contact with children and grandchildren

Table XLVIII indicates that in each of the four groups the percentage of those who quarrelled with their offspring or had no, little, or a moderate amount of contact with them was consistently somewhat lower, though never significantly so, in the category of those whose health made a favourable impression on the physician than in the category of those whose health was considered less favourable. This may indicate a

certain relationship between the amount of contact and health, although any such connection may again be interpreted in a double sense.

These percentages are as a whole somewhat larger when they concern the combination of subjective well-being with the amount of contact. For women the difference is even significant, so that these findings point to a certain relationship somewhat more clearly: either limited contact with their children leads women to feel less well or (although this seems less probable) their complaints make the contact less satisfactory.

Retirement

In agreement with Table XLVI, Table XLIX shows that the percentage of those who said they had continued to work is consistently appreciably higher in the group with objective good health than in the groups with objective not-so-good health. The percentage of those with good health was also higher than for the not-so-good category, although only insignificantly so, for the men who had found retirement agreeable; for the women, whose activity usually does not stop suddenly, the reverse was established. It is especially striking, however, that the percentages of those who would actually have preferred to continue working were almost always appreciably higher in the group of those whose health was not so good than in the group with good health. On the basis of this finding, and primarily for the men of 65-69, it might be assumed that a rather large number were retired against their own wishes, perhaps as a result of unsatisfactory health. However, it might equally well be assumed that the unwilling retirement had resulted in deteriorated health. Almost the same picture, although much less distinct, is also provided by the percentages of those who had been indifferent to their retirement.

The results of combining subjective health with feelings about retirement do not differ substantially from what has just been reported, although the differences are somewhat less definite and do not permit, as far as the feelings about retirement are concerned, the drawing of conclusions.

Opinion about the past

To facilitate comparison on this point, two criteria were chosen: those who, looking back, were satisfied with their lives or felt them to have been successful, and those who were unsatisfied or considered their lives

to have been failures. Table L shows that in the latter category the percentage of those whose physical condition was considered as not-so-good by the physicians was consistently higher (even significantly for women of 65-74) than of those who were in good health. The same, to an even somewhat greater degree, held for those who felt themselves subjectively to be in good or not-so-good health, respectively. There was thus a certain relation, but whether the good health was cause or result of a favourable opinion cannot be concluded from these data.

Results of the memory test

For this combination the aged were classified into three groups: persons who achieved 15 or less points; persons with 16, 17, or 18 points; and persons with 19 or more points. (The maximum was, as reported, 26 points.) Only the last group can be considered rather useful for comparative purposes because the subjects belonging to this classification were known (in spite of the fact that they might have refused to answer one or more of the memory test questions) to have achieved a reasonably high score.

It is then apparent (see Table LI) that of this group of subjects the percentage in the category of objective good health is consistently higher than in that of persons judged by the physician to be in not-so-good health. The difference is even significant for men of 65 through 74 years (73 and 55%); for women, on the other hand, while there is also a difference it is of less importance (60 and 54%). There is thus, however, a certain connection between good health and a good memory. (By which is meant here that more than 18 points were scored on the test.) This is also shown by the following data. The mean number of points achieved by those who had done the whole test was, for the groups whose condition the physician had judged as good, not-so-good, or bad, for men 19.4, 17.5, and 13.2, and for women 18.5, 17.1, and 13.3 respectively. According to the Smirnow test, the difference between these values was significant ($P < 0.01$).

The same although less distinct picture is provided by the combination of subjective health and a good memory. The relevant differences between the groups with a subjective good and a subjective not-so-good health were minor. Between these groups and those of subjects with subjective bad health, the difference was appreciable, however. The following data, obtained by another method of processing the material, also shows this. The mean number of points achieved by those who

answered all the memory questions in the groups whose health was judged as good, not-so-good, or bad was for men 19.2, 18.3, and 16.5, and for women 18.1, 17.9, and 15.4 respectively. Only the difference between the last two figures was significant according to Smirnow's test. However, where the sequence of the means clearly shows a downward tendency, it can be concluded that with a higher degree of subjective health better results were achieved on the test. The correlation of a good memory with favourable judgement of the health by the physician is, however, greater than the correlation between a good memory and good subjective health.

B. OTHER COMBINATIONS OF CERTAIN DATA

In the preceding material an attempt has been made by means of the combination of the evaluation of their health by the subjects (subjective health) and of the physical condition of the subjects according to the examining physician (objective health) with a number of other data, to bring out further any connection between certain factors and health. It however also seemed desirable to investigate a number of quite different combinations. Here the starting point was thus not primarily the subjective or objective health, but some other condition. For the sake of simplification, the classification into two age groups was again consistently used: a younger group of 65 through 74 years and an older group of 75 and over.

In the first place an attempt was made to detect the existence of a relationship between:

Objective health and the month in which the examination was done.

Since more subjects were examined in the summer than in the winter months, it is an obvious assumption that therefore less symptoms or conditions particularly prevalent in the cold seasons (for instance bronchitis) would be observed than would have been found if about the same number of people had been examined in each month of the year. This might have influenced the opinion of the examining physician concerning the health of his subjects, in the sense that in the summer months more subjects would have been rated "good" than in the winter. Calculations using $m \times n$ tables showed, however, that this was not the case, for either men ($\chi^2 = 9.64$, $P = 0.56$) or women ($\chi^2 = 18.04$, $P = 0.08$). The more frequent examination in the summer had thus no distorting effect on this point.

Among other things, it was also investigated whether economic status, marital status, character of the place of residence, or group health insurance membership had influenced certain results of a more medical nature or at least showed some connection with them. A number of combinations with socio-economic status were first subjected to a closer study.

1. Socio-economic level

Last visit to doctor. Table LII indicates that the percentages for the three socio-economic classifications of the subjects who had last consulted a doctor within the three months preceding this investigation consistently showed little mutual difference, as did the percentage of those who had done so in a period of 4-12 months before the investigation, or in the entire period preceding the year before the study. With the exception of the men of 75 and over, each sex and age group showed at the most that in the most "prosperous" classification (with an income of over *f* 3000 per year) somewhat fewer persons had seen a doctor within the preceding three months, the difference with the lowest classification being relatively the greatest. In the two other groups according to the division of the periods in which a doctor's advice had been asked, the picture varied throughout and as a whole conveyed no information. The conclusion may be that the socio-economic level and the period of last consultation of a doctor were two circumstances which had little or no connection with each other.

Troublesome complaints for which the doctor was not consulted. In the lowest socio-economic bracket, 6% of the men of 65-74 had not consulted a doctor in spite of troublesome complaints; in the middle bracket it was 7%; and in the highest, 11%. For the group of men of 75 and over, these percentages were 8, 9, and 9 and for the same groups of women 9, 11, and 12 and 9, 9, and 12 respectively. There was therefore a slight trend observable, in that the higher the socio-economic level the less the doctor was consulted in spite of troublesome complaints. For the rest, the differences between the various percentages are very small. The percentage (8) of all those in the lowest income group who had not consulted a doctor in spite of troublesome complaints also did not differ significantly from that (11) of all those in the highest bracket who had not done so.

Hospitalization after the 65th year. In the successive socio-economic classifications (from low to high), for the younger group of men 33%,

24%, and 17% of the subjects had been hospitalized after the 65th year. For the older group of men these percentages were respectively 40, 40, and 42, for the younger group of women 31, 25, and 29; and for the older women 37, 39, and 34. The picture is not very clear, with the exception of the fact that in the younger group of men the least well off had been relatively the most frequently hospitalized. The percentage of all subjects from the lowest level who had been hospitalized after their 65th year (36) did, however, differ significantly from that (28) which applied to all subjects in the highest classification who had been hospitalized after this age.

Anaemia. In the three successive socio-economic classifications, in the younger group of men 3.1%, 2.8%, and 1.3% had a haemoglobin content of 10 gr.% or less. For the older group of men these percentages were 5.5, 4.0, and 0.8; for the younger group of women they were 5.5, 3.7, and 3.7; and for the older group of women 6.0, 7.1, and 4.0, respectively. The differences between these percentages are, especially within age groups, very limited. There is, however, a certain trend to be detected, in that somewhat less anaemia was found in the highest classification than in the middle and particularly the lowest classifications. The percentage of all in the lowest classification who were anaemic (5.4) differs significantly from that of the subjects in the highest class who had this condition (3.2). A lower income thus appears to be one of the factors which for the aged too is connected with a somewhat greater chance of anaemia, which is in fact not surprising.

Diastolic blood pressure. In the three categories ranked according to income from "low" to "high", the percentages in the younger group of men with a diastolic pressure of 100 mm. Hg. or higher were 28, 32, and 25; in the older group of men 31, 30, and 34; in the group of younger women 53, 42, and 42, and in the group of older women 43, 39, and 43. From these results it could be concluded that the diastolic hypertension appeared in approximately equal amounts in all three categories, although the percentage for all aged in the lowest classifications (39) was somewhat higher than that for all aged in the middle classification (36) and in the highest (34).

Besides these combinations of socio-economic factors with data of a more "somatic" nature, some combinations with data from the psychological material were also examined.

Loneliness, withdrawal. Reports of either or both loneliness and being withdrawn were made in the three socio-economic classifications by 16%, 15%, and 11% of the younger men, by 26%, 18%, and 17% of the older men; by 22%, 21%, and 20% of the younger women, and by 29%, 23%, and 19% of the older women. These results indicate that the higher the level the less there is of loneliness, withdrawal, or the two combined. The percentage of all subjects together in the lowest classification (30) differs significantly from that in the middle classification (19) and that in the highest (16). The two last levels do not differ significantly.

Results of the memory test. Table LIII shows clearly that in the highest socio-economic classification in general many more persons achieved 19 or more points, fewer persons 16, 17, or 18 points, and far fewer persons 15 or less points in the memory test than in the two other classifications; and that the middle category in its turn made better results than the lowest category. That those with higher incomes achieved the best results and those with the lower incomes the least good results is probably due to a better education and wider intellectual experience in the former, on the one hand, and perhaps to a certain hereditary disposition on the other.

2. Marital status

For a consideration of this factor, the mutual comparison was made of the group of those which had never been married, the group of those who were still married, and the group of those who had at one time been married.

Regular consultation of the physician. Of the three categories in the above order, in the group of the younger men 27%, 35%, and 31% respectively reported seeing a doctor regularly. For the older group these percentages were 32, 38, and 44. For the younger women they were 44, 50, and 60, and for the older ones 58, 61, and 54. No clear line can be detected in these results; thus, regular consultation of a physician had no correlation with a particular marital status.

Hospitalization after the 65th year. In the same order in the group of younger men 27%, 21%, and 31% reported having been hospitalized at least once after the 65th year. In the older men's group these percentages were 37, 36, and 45; in the younger group of women 25, 28, and 27; and in the older group of women 40, 34, and 40. Taken as a whole, the

married (28%) had been hospitalized relatively less than the unmarried (33%) and than those who had at one time been married (38%); the difference between the former and the latter was significant. The fact that the married had been hospitalized less often than the others may be explained by the presence of a spouse, who could do home care. The possibility can also be advanced that the married were less seriously ill than the others, but the fact that no correlation was found between married state and regular consultation of a physician contradicts this somewhat.

Diastolic blood pressure. In the three categories based on marital status, a study was also made of these categories in relation to the numbers of those who had a diastolic blood pressure of 100 mm. Hg. or more at the time of the investigation. For the group of men between 65 and 74 years of age the percentages were 23, 29, and 32; for the older men, 25, 29, and 34; for the younger women 37, 44, and 47; and for the group of older women 40, 42, and 40.

For the men taken as a whole, those who had never been married had the least high diastolic pressure (24%), followed by the married (29%), and this condition was seen most frequently in the group which had once been married (33%). The equivalent percentages for women were 38, 43.3, and 42.6, so that among them the married group had slightly (but very little) more high blood pressure than the two other groups.

Concerning marital status, besides the combinations with somatic data a few combinations were also made with data from the more psychological part of the investigation.

Loneliness, withdrawal. In the same sequence, of the younger group of men 26%, 10%, and 29% reported being lonely, withdrawn, or both. In the older group of men these percentages were 29, 14, and 25; for the younger women 25, 13, and 32; for the older women 34, 16, and 27. As could be expected, the married were distinctly less withdrawn or lonely than the two other categories. The two last categories did not in general differ on these points: never married, 29%; no longer married, 29%.

Boredom. In the same order, for the younger men 19%, 17%, and 22% of those questioned stated that they were occasionally or often bored. In the group of older men these percentages were 32, 26, and 31; in the

younger group of women 23, 17, and 26; and in the older group of women 27, 27, and 30. These figures show that marital status and boredom or the absence of boredom have little connection; at the most there were somewhat fewer married than not or no longer married people who were bothered by boredom.

3. Character of the place of residence

In relation to several points, an attempt was made to determine whether living in the country, in urbanized country places, or in the city could be found to show any effect. In evaluating these data it should be kept in mind that the place noted as that in which a subject lived at the time of the study did not mean at all that he had always lived in such surroundings. It cannot, therefore, be concluded from these data that any connection between the place of residence and the frequency of particular conditions is necessarily causative.

Regular consultation of the physician. Of the younger group of men (65-69 years) who lived in the country, in an urbanized country place, or in a city, 30%, 42%, and 37% stated that they regularly consulted a doctor; for the older men (75 years and over) it was 36, 47, and 46. For the younger women the percentages were 47, 59, and 62; and for the older women 50, 65, and 63. For all the men taken together the percentages were 33, 40, and 42; for all the women together 48, 62, and 63. Thus in the country the doctor was consulted distinctly less frequently than in the two other types of place, which on this point did not show much mutual difference. This is probably partially dependent on the sometimes greater inaccessibility of the physician to country dwellers.

Hospitalization after the age of 65. Of the younger group of men in the same sequence 22%, 32%, and 22% had been hospitalized after the 65th year, and of the older men 38%, 44%, 43%; for the younger women 26%, 34%, and 27%, and for the older women 34%, 50%, and 40%. For all subjects taken together, the percentages were 31, 40, and 34. Thus the aged living in urbanized country places had been relatively more often hospitalized after their 65th year than the city-dwellers and distinctly more than those living in the country. For this last category, the sometimes fewer hospital facilities and the greater distances to the nearest hospital will have been of some importance. In addition, the opposition to hospitalization still sometimes more frequently met with in the country will also have played a role, as well as the fact that the services

of the Cross Societies [40] are often more extensive and more easily obtained there than in cities, and conversely in the city the urge for hospitalization of a patient arises sooner because of lack of space, reluctance to care for an old person, etc. Without further investigation, the greater incidence of hospitalization in urbanized districts cannot be explained.

Diastolic blood pressure. In the same order of residence, of the younger men 30%, 24%, and 30% had a diastolic blood pressure of 100 mm. Hg. or more. For men of the older group, these percentages were 32, 28, and 30; for the younger women 46, 43, and 42; and for the older women 40, 39, and 42. For all the men taken together, the percentages were 31, 26, and 30; for all the women together 43, 41, and 42. All these percentages show little mutual difference, so that it cannot be said that inhabitants of one of the three types of place have relatively distinctly more diastolic hypertension than the inhabitants of the other two types of place.

Loneliness, withdrawal. In the three successive residential categories, of the younger group of men 12%, 21%, and 15% said they were lonely, withdrawn, or both, and in the older group of men it was 19, 20, and 23%. For the younger women the percentages were 17, 24, and 26, and for the older group of women 23, 33, and 26. For all men taken together they were 16, 20, and 19, and for all women together 20, 29, and 26. The differences between these percentages are not significant, but there is a trend indicating that the aged living in the country were the least lonely or withdrawn, which is not so surprising since in such an environment there are still sometimes greater opportunities for contact, for example through living together with children.

4. Membership in health insurance groups

An attempt was made to determine whether membership in a health insurance group affected the frequency of certain findings. Three categories were selected: aged who had never been members of a health insurance group; those who had held membership for a period of less than 5 years before the investigation was made; and those who had been members for 5 or more years.

[40] The Green Cross Society as well as the Yellow-White and Orange-Green Cross Societies are voluntary associations which provide home care of the sick, consultation centers (such as well-baby clinics, tuberculosis centres etc.), and health education. By far the greater part of the population of The Netherlands (about 70%) are members of one of these Societies.

Last consultation of a physician. As Table LIV shows, no clear-cut influence of membership in an insurance group with regard to this point could be found. All that can be detected is a certain tendency to be found in the fact that in the group which had never held such membership somewhat fewer persons had seen a doctor in the three months preceding the investigation than in the groups which had held such membership for the shorter or the longer period.

Comparison of the three categories with regard to the percentages of all men who had seen their doctor more than a year before the T.N.O. investigation, i.e. 40, 29, and 38, and for all the women 25, 20, and 23, makes it clear that the percentages of those who had never been members were the largest (40 and 25). The differences with the other percentages are, however, not significant, so that no more can be said than that more of those who had never held such membership belonged to the category who had not seen a doctor in at least a year than were those who were members of such insurance groups.

Use of drugs. Here too the picture is not clear, as can be seen from Table LV. Of the men who had never been members of a health insurance group, 48% took no drugs at all at the time of the investigation; of the men who had been members for 0-5 years 45%, and of the men who had been members for more than 5 years 54%. For women these percentages were 38, 35, and 33. The differences in these percentages were not significant for either sex. The non-use of drugs was thus probably not correlated with health insurance. There was some indication, however, that non-members used relatively somewhat more drugs only on their own initiative than members. The difference between the percentage of non-members (14) and members who had belonged for 5 or more years (9) was even significant. (The percentage for 0-5 years of membership was 10.) The results in the preceding section probably supply a partial explanation of this difference.

Subjective health. Table LVI gives the results of the combination of membership in a health insurance group and the subjective evaluation of their health by the subjects (a combination of the answers to the question on this which was asked twice). These data do not support a specific conclusion; in other words, among the members of such health insurance groups there were not distinctly more persons than among the non-members who evaluated their health as good, not so good, or bad.

Objective health. Table LVII, which gives the results of the combination of insurance membership and the physical condition as the examining physician judged it, also shows no clear correlation between the two sets of data.

Previously undetected abnormalities. Consideration of Table LVIII, which gives the combination of insurance membership and previously undetected abnormalities, indicates that these data only suggest that they in a sense, but not conclusively, show that those who had been members for 5 or more years had somewhat more previously undiscovered abnormalities (33%) than those who had never been members (27%) or who had been members for less than 5 years (25%).

A number of combinations of data of a more clinical nature were also considered more closely.

a. Abnormalities during pregnancy, delivery, or childbed

It was investigated whether a few abnormal findings were related to abnormalities of pregnancy, delivery, or childbed.

Blood pressure. Of the younger women who had borne children but who during the investigation reported having had no abnormalities during or connected with pregnancy, 44% had a diastolic blood pressure of 100 mm. Hg. or more plus a systolic pressure of 160 mm. Hg. or more; for women who had had such abnormalities or disturbances connected with pregnancy the percentage was 43. In the group of older women the relevant percentages were 40 and 34. The difference between these last two percentages is not significant. Therefore, no clear-cut connection between abnormalities during pregnancy, delivery, or childbed and high blood pressure at more advanced ages, i.e. at least at the time of the investigation, could be established.

Heart auscultation. The percentages of women in the younger group who had or had not had such abnormalities connected with or during pregnancy and in whom no murmur of any kind was found during the investigation were exactly the same (76). For the older women these percentages were 66 and 67, respectively, so that no connection would be established for them either, between earlier abnormalities of gestation and heart abnormalities found by auscultation during the investigation.

Vulva, vagina. Table LIX indicates that there is also no evidence for a clear connection between abnormalities of vulva and/or vagina found during the investigation and a history of pregnancy abnormalities and related conditions. There is only a certain amount of indication that women who had not suffered from the latter disturbances had less prolapse and/or stress incontinence (24%) than did women who had had them (27%). In relation to the frequency of kraurosis, eczema, leukorrhea, and other abnormalities there was no difference whatsoever.

Internal genital organs. There were – not markedly but somewhat – more disturbances of the internal genitals found in women who had had pregnancy and related abnormalities than in women who had not had them. This difference, as Table LX shows, concerned the group of benign erosion, myoms, ovarial and other abnormalities; the percentages were 9 for the group without abnormalities during pregnancy and 14 for the others.

Objective health. As Table LXI shows, more women who had not had pregnancy or related abnormalities were rated as in good physical condition by the physicians than women who had had such disturbances. This difference was significant for the younger group. In the older group, the rather high percentage of women who had had such disturbances and whose physical condition was rated bad is particularly notable.

b. Glycosuria

Glycosuria and hypertension. Of 476 men with a diastolic blood pressure of 100 mm. Hg. or higher, sugar was found in the urine of 23 (4.8%); of 1116 men with a lower blood pressure this occurred 40 times (3.6%). For women the percentages were 4.7 and 6.0. These figures do not provide a basis for any conclusions concerning a relationship between these two conditions.

Heart and cardio-vascular abnormalities in subjects with glycosuria or who reported having diabetes and in subjects without these abnormalities. Of 64 men who said they had diabetes, 38 also had heart or vascular abnormalities, which is 59%; of 30 men with glycosuria 12 (40%) had these abnormalities; and of 1509 men without glycosuria 736 (49%) had such abnormalities. For women these percentages were 61, 56, and 64. No specific relationship between the two conditions could be demonstrated.

The data in Table LXII lead to the same conclusion concerning abnormalities found on percussion of the heart and large blood vessels. Calculations based on this Table establish that percussive heart abnormalities are hardly more frequent in men with glycosuria than in men without it. For women the difference is somewhat greater, in particular for certain age groups, but taken as a whole the data do not support a clear-cut relationship between glycosuria and percussive heart abnormalities.

SUBJECTIVE COMPLAINTS AND OBJECTIVE FINDINGS

Subjective complaints concerning affections of kidneys and/or bladder and/or sexual organs in relation to objective urinary abnormalities

Concerning this combination, it was investigated whether those who reported having one or more such complaints showed many more urinary abnormalities than those without complaints. Table 71 shows that this

Table 71. Complaints of disorders of the urogenital system and results of urine analysis; by sex and age groups; percentages

Tabel 71. Klachten over aandoeningen van het urogenitaal apparaat en resultaten van het urine-onderzoek; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Complaints Eventuele aanwezigheid van klachten	Results of urine analysis Resultaten urine-onderzoek			Total Totaal	
		No albumin, glucose or urobilin Geen eiwit glucose of urobiline	Albumin only Alleen eiwit	Other abnorm. Overige afw.	%	abs.
Men/Mannen						
65-74	—	82.9	3.9	13.2	100	710
	+	44.8	34.5	20.7	100	29
75 +	—	71.5	9.9	18.6	100	746
	+	37.1	38.6	24.3	100	70
Women/Vrouwen						
65-74	—	79.9	8.4	11.7	100	669
	+	51.8	27.8	20.4	100	54
75 +	—	71.1	13.4	15.5	100	703
	+	51.3	30.3	18.4	100	76

was indeed the case. Where albumin was found in the urine of only 8% of all subjects for whom none of these complaints was noted, 33% of

those with complaints were found to have albuminuria. Other urinary abnormalities, whether or not combined with albuminuria, were also more frequent in the latter category, but not to anywhere near the same amount.

Glycosuria and diabetes in the history

Of the 64 men who reported having diabetes, sugar was found in the urine of 34 cases and in 30 no sugar was found. For 108 women these figures were 57 and 51 respectively. To a great extent the absence of glycosuria can naturally be ascribed to adequate regulation of the disease. In contrast, sugar was demonstrated in the urine of 30 out of the 1539 men and 27 out of the 1438 women who reported not having diabetes, which amounts to $\pm$ 2% of those examined, a not unappreciable percentage. Although in all probability not all these persons suffered from diabetes, it may nevertheless be assumed, at least if the sample is accepted as being representative, that there are still many undiscovered diabetics among the aged in The Netherlands.

The subjects' opinion of their blood pressure and the relevant objective findings

Although the physicians were asked to modify the answer given by the subjects to the question concerning the state of their blood pressure according to what he himself knew about it, so that we are dealing here not only with what the aged themselves reported about their blood pressure, it seemed useful to compare the two sets of results. Consideration of Table LXIII indicates that in the younger group about 1/4th and in the older group 1/3rd of those who reported (or of whom the physician sometimes said) that they had neither high nor low blood pressure, nevertheless had a diastolic tension of 100 mm. Hg. or more. Those who reported a slightly or very low blood pressure almost always had a tension below 100 mm. Hg.; of those who reported a somewhat high pressure, more than half did have a diastolic pressure of 100 mm. Hg. or more, and of those who reported a very high blood pressure more than 3/4ths had a diastolic pressure of 100 mm. Hg. or more. Summarizing, it can be said that the "subjective" replies and the objective findings rather frequently showed some discrepancies.

It seemed worthwhile to find out whether combination of the results from the question concerning whether the examining physician had found serious or non-serious abnormalities whose existence was previously unknown to him with some other data would provide a better understanding of the occurrence of these findings.

Socio-economic level

Examination of the percentages given in Table LXIV shows that the figures for those for whom no serious or non-serious previously unknown abnormalities were found do show some mutual differences per socio-economic classification, but that these differences are of contradictory nature for the respective age and sex groups. It can only be said that the group of those in whom serious, previously unknown abnormalities were found consistently included relatively few people from the middle classification (incomes higher than ± the O.A.P.E.A. amount but less than *f* 3000 per year) and that of this group the individuals rather frequently belonged to both the lowest and highest classifications. The economic level thus showed no connection with the frequency of previously undiscovered abnormalities.

Subjective health

The subjects in whom a previously unknown serious or non-serious abnormality had or had not been found were for this combination divided into three categories: those who had twice stated that they felt in good health, those who had once or twice stated that they considered their health not so good, and those who had at least once said that they considered their health bad. Consideration of the relevant figures (see Table 72 page 206) clearly shows that among subjects for whom no unknown abnormalities were found the percentage of those who considered their health good was consistently lower than for subjects in whom such abnormalities were found. For both men and women the difference between the relevant percentages for those in whom no previously unknown abnormalities were found and for those in whom non-serious abnormalities were found were significant. As Table 72 shows, the subjective health was also relatively the least good among those in whom no previously

Table 72. Any deviations not previously discovered and subjective evaluation of health by the subjects; by sex and age groups; percentages

Tabel 72. Eventueel niet eerder ontdekte afwijkingen en persoonlijke gezondheidsgevoelens van de onderzochten; per geslacht en leeftijdsgroep, percentages

Ages Leeftijd	Kind of deviations not previously discovered Aard der eventueel niet eerder ontdekte afw.	Evaluation Kwalificatie			Total Totaal	
		Twice evaluated as good 2 × als goed gekenmerkt	Evaluated once as good + once as not so good or twice evaluated as not so good 1 × als goed + 1 × als matig òf 2 × als matig gekenmerkt	At least once evaluated as bad Ten minste 1 × als slecht gekenmerkt	%	abs.
Men/Mannen						
65-74	no dev./geen afw.	76.4	20.3	3.3	100	508
	serious dev./ernstige afw.	82.8	17.2	—	100	29
	non-serious/niet ernstige deviations/afwijkingen	86.7	11.9	1.4	100	219
75 +	no dev./geen afw.	67.0	29.8	3.2	100	561
	serious dev./ernstige afw.	71.7	26.1	2.2	100	46
	non-serious/niet ernstige deviations/afwijkingen	80.6	18.1	1.3	100	226
Women/Vrouwen						
65-74	no dev./geen afw.	58.8	37.7	3.5	100	512
	serious dev./ernstige afw.	68.1	29.8	2.1	100	47
	non-serious/niet ernstige deviations/afwijkingen	65.0	33.3	1.7	100	180
75 +	no dev./geen afw.	54.3	39.1	6.6	100	573
	serious dev./ernstige afw.	64.2	28.3	7.5	100	53
	non-serious/niet ernstige deviations/afwijkingen	64.5	33.1	2.4	100	169

unknown abnormalities were found. One explanation of these results might be that those who were dissatisfied with their condition had put themselves more often or sooner under doctor's care than those who had no complaints, as a consequence of which the former group would of course have been examined more, which reduces the chances of discovery of previously unknown abnormalities.

Objective health

The phenomenon just reported is to a certain extent again present here (see Table 73, page 208). To the group of subjects in whom no previously unknown abnormalities, albeit of a non-serious nature, were found, there belonged relatively the most those whose condition was judged favourably by the examining physician. In contrast, among those in whom serious, previously unknown abnormalities were found, relatively the greatest number were rated as having not-so-good or even bad health. One conclusion from this finding is perhaps that a complete physical examination of those aged whose physical condition is not so good is particularly desirable, because it rather often uncovers serious, previously unknown abnormalities.

Interval since last medical treatment

Table 74 (page 209) shows that in the group who were under medical care in the period three months before the T.N.O. investigation the percentage of those in whom no previously unknown abnormalities were found is consistently higher than the percentage of those for whom this was the case. In contrast, in the group of those who had not been under doctor's care for more than a year, the percentages of those in whom serious, previously unknown abnormalities were found was consistently higher than the percentage of those in whom only non-serious previously unknown abnormalities were found and consistently even appreciably higher than the percentages of those in whom no previously unknown abnormalities were found. The fact that medical advice had been asked for some reason or other shortly before was thus coincident with a smaller number of previously unknown abnormalities. These findings may constitute evidence that it is worthwhile to keep the aged under regular medical supervision, although it should be pointed out that some of the figures on which this cautious conclusion is based are small.

Table 73. Any deviations not previously discovered and physical condition according to the G.P.; by sex and age groups; percentages

Tabel 73. Eventueel niet eerder ontdekte afwijkingen en lichamelijke toestand volgens de huisarts; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Kind of deviations not previously discovered Aard der eventueel niet eerder ontdekte afwijkingen	Evaluation Kwalificatie			Total Totaal	
		Good Goed	Not so good Matig	Bad Slecht	%	abs.
Men/Mannen						
65-74	no deviations / geen afwijkingen	78.8	19.8	1.4	100	506
	serious deviations / ernstige afwijkingen	75.9	20.7	3.4	100	29
	non-serious deviations / niet ernstige afwijkingen	89.1	10.0	0.9	100	219
75 +	no deviations / geen afwijkingen	65.5	30.6	3.9	100	562
	serious deviations / ernstige afwijkingen	58.7	39.1	2.2	100	46
	non-serious deviations / niet ernstige afwijkingen	68.8	27.6	3.6	100	225
Women/Vrouwen						
65-74	no deviations / geen afwijkingen	68.4	29.4	2.2	100	511
	serious deviations / ernstige afwijkingen	63.8	36.2	—	100	47
	non-serious deviations / niet ernstige afwijkingen	75.6	23.3	1.1	100	180
75 +	no deviations / geen afwijkingen	51.9	40.8	7.3	100	576
	serious deviations / ernstige afwijkingen	43.4	45.3	11.3	100	53
	non-serious deviations / niet ernstige afwijkingen	58.5	37.9	3.6	100	169

Table 74. Any deviations not previously discovered and the time of the last medical treatment; by sex and age groups; percentages

Tabel 74. Eventuele niet eerder ontdekte afwijkingen en tijdstip van de laatste geneeskundige behandeling; per geslacht en leeftijdsgroep; percentages

Ages Leeftijd	Kind of deviations not previously discovered Aard der eventueel niet eerder ontdekte afw.	Last medical treatment Laatste geneeskundige behandeling			Total Totaal	
		< 3 months ago < 3 mnd. geleden	3 months-1 yr ago 3 mnd.-1 j. geleden	> 1 yr ago > 1 jr. geleden	%	abs.
Men/Mannen						
65-74	no deviations / geen afwijkingen	41.1	19.3	39.6	100	508
	serious deviations / ernstige afwijkingen	25.0	25.0	50.0	100	28
	non-serious deviations / niet ernstige afwijkingen	30.2	22.8	47.0	100	219
75 +	no deviations / geen afwijkingen	46.4	23.8	29.8	100	564
	serious deviations / ernstige afwijkingen	20.0	26.7	53.3	100	45
	non-serious deviations / niet ernstige afwijkingen	42.5	19.0	38.5	100	226
Women/Vrouwen						
65-74	no deviations / geen afwijkingen	56.7	22.6	20.7	100	513
	serious deviations / ernstige afwijkingen	40.5	19.1	40.4	100	47
	non-serious deviations / niet ernstige afwijkingen	46.6	17.8	35.6	100	180
75 +	no deviations / geen afwijkingen	67.9	15.7	16.4	100	578
	serious deviations / ernstige afwijkingen	41.6	22.6	35.8	100	53
	non-serious deviations / niet ernstige afwijkingen	50.0	23.5	26.5	100	170

Troublesome complaints for which the doctor was not consulted

Finally, it was investigated whether among those who in spite of troublesome complaints had not consulted a doctor there were more subjects for whom serious or non-serious previously unknown abnormalities were discovered than among those who had put themselves under doctor's care because of troublesome complaints. In the two age groups of men and women, 7% and 7%, and 8% and 7% of the subjects, respectively, in whom no previously unknown abnormalities were found said that they had troublesome complaints for which they had, however, not consulted a doctor. In the group of those in whom serious previously unknown abnormalities were found, 10% and 20% of the men and 15% and 21% of the women said they had not consulted a doctor in spite of having troublesome complaints, and in the group of those in whom non-serious previously unknown complaints were found the percentages were 11 and 9, and 15 and 14 respectively. Of those in whom no previously unknown abnormalities were found, therefore, only 7.5% said they had not consulted their doctor in spite of troublesome complaints, but of those in whom previously unknown serious abnormalities were found, 13.0% reported that they had not done so. These two percentages differ significantly. The percentage of those in whom previously unknown serious abnormalities were found and who had not consulted a doctor in spite of troublesome complaints was 17.3; the percentage of those in whom non-serious previously unknown abnormalities were found and who in spite of troublesome complaints had not seen a doctor was 12.0. These last two percentages did not differ significantly. The indications are that if all aged persons who have troublesome complaints were to actually go to the doctor fewer previously unknown abnormalities would be found by such a survey as the present one. This is self-evident, and again supports regular medical supervision of the aged.

DIASTOLIC BLOOD PRESSURE AND CERTAIN OTHER FACTORS

Diastolic blood pressure and smoking habits

Concerning smoking habits, four groups were classified for these statistical analyses:

1. persons who never or almost never had smoked;
2. persons who smoked predominantly cigarettes, but less than 15 a day; or

persons who smoked predominantly cigars, but less than 4 a day; or
persons who smoked predominantly a pipe, but less than 8 a day; or
persons who smoked a combination of cigarettes, cigars, and a pipe, but less than ± 15 grams per day,
[all for the greater part of their lives];

3. persons who smoked roughly one of the above amounts or more for the greater part of their lives; and
4. persons who predominantly used chewing tobacco.

For the younger and older age groups of men, a diastolic blood pressure of 100 mm. Hg. or higher was found for 41% and 29% in the first category, 25% and 31% in the second category, 29% and 33% in the third category, and in the last category (chewing tobacco) 39% and 21%. These figures indicate that 34% of the non-smokers, 28% of the "light" smokers, 31% of the "heavy" smokers, and 28% of the tobacco chewers had a diastolic hypertension. These percentages do not differ significantly mutually, and no special connection between smoking habits and diastolic blood pressure can be concluded from them. It is noticeable, however, that the percentage of subjects with a somewhat high diastolic tension is relatively highest among the non-smokers.

Diastolic blood pressure, marital status, and offspring

Consideration of Table 75 (page 212) shows that marital status and high diastolic blood pressure were not connected to any important degree. This Table also indicates that for women there was little or no connection between whether or not they had given birth to children and diastolic tension. An analysis of variance showed that there were no significant differences between the observed values (for men $P = 0.13$, for women $P = 0.22$).

Diastolic blood pressure and results from the memory test, also in connection with subjective health

No correlation could be shown between high diastolic blood pressure and the results of the memory test. It can therefore not be concluded that there is any connection between, for instance, high diastolic blood pressure and inferior results on this test on the basis of the available data. Further analysis of these relationships indicated that subjective health had not influenced these findings.

Table 75. Marital status, offspring, and diastolic blood pressure; by sex
Tabel 75. Huwelijkse staat, nageslacht en diastolische bloeddruk; per geslacht

Sex Geslacht	Marital status Huwelijkse staat	Mean diast. blood pressure Gemiddelde diast. bloeddruk	Standard deviation Standaard-afwijking	Number of persons Aantal personen
Men/Mannen	Singe/Ongehuwd	89.3	14.5	97
	Married/Gehuwd	89.9	15.2	905
	Previously married Gehuwd geweest	91.5	15.9	510
Women/Vrouwen	Single, childless Ongehuwd, kinderloos	93.1	17.7	157
	Single, with children Ongehuwd, kinderen	95.0	7.1	2
	Married, childless Gehuwd, kinderloos	95.7	19.0	64
	Married, with children Gehuwd, kinderen	96.5	15.7	545
	Previously married, childless/Gehuwd geweest, kinderloos	94.6	17.4	97
	Previously married, with children/Gehuwd geweest, kinderen	94.9	18.5	674

TEETH AND SOME OTHER FACTORS

Condition of the teeth and smoking habits

For these statistical analyses the same classification of smoking habits was used as that given on page 210 and 211. Three categories were established for the condition of the teeth:

1. persons with reasonably good or not-so-good teeth,
2. persons with bad teeth, and
3. persons with dentures.

From the indications in Table LXV, chewing tobacco had had little effect on the condition of the teeth, although it is noticeable that the percentage of chewers is very low among those with dentures (very small numbers are involved, however). It can also be seen that among those who had reasonably good or not-so-good teeth there were rather many

non-smokers, while among those with dentures there were rather a lot of heavy smokers. The percentages of heavy smokers among subjects with reasonably good teeth or not-so-good teeth, subjects with bad teeth, and subjects with dentures differ significantly from each other.

Condition of teeth and blood sedimentation rate

In view of the fact that a high sedimentation rate was encountered rather frequently, it seemed worthwhile to examine more closely the combination of this data and that for the condition of the teeth. Of those whose teeth were in reasonable or not-so-good condition in the two age groups of men and women, a sedimentation rate of more than 15 mm. after one hour was found in 12% and 14% of the former and 17% and 41% of the latter, respectively; for those with bad teeth these percentages were 16 and 28, and 38 and 38 and for those with dentures 11 and 22, and 29 and 29, in the same order. A sedimentation rate of more than 15 mm. was thus found in 17% of the subjects with reasonable or not-so-good teeth, in 29% of the subjects with bad teeth, and in 23% of those using dentures. Significantly more subjects with bad teeth had a high sedimentation rate than subjects with reasonably good or not-so-good teeth or than subjects with dentures. It is therefore possible that the bad condition of their teeth is a cause of high blood sedimentation rate in some elderly people. It is obvious that – as has been said before – a third (or fourth, etc.) factor could be responsible for this, in that case only apparent, correlation. It might, for example, well be in the present case that a chronic condition has led to both the high sedimentation rate and the bad teeth.

BLOOD SEDIMENTATION RATE AND SOME OTHER DATA:

Objective health

As Table LXVI shows, the physical condition of the aged who had a higher rate than 15 mm. after 1 hour was appreciably more often rated less favourably by the physician than the health of those whose rate was 15 mm. or lower after the first hour. Among the subjects with a high rate there were significantly more persons with a not-so-good objective health and with bad objective health than among those with a low rate.

The inferior physical condition thus was frequently accompanied by a high sedimentation rate. It is of course impossible to say to what degree the judgement of the examiners could have been affected by their awareness of the rate of sedimentation.

Haemoglobin content

In the younger and older age groups of both sexes, of those whose sedimentation rate was 15 mm. or less after the first hour, 1.8%, 2.9%, 3.9%, and 5.4% respectively had a haemoglobin content of 10 gram percent or less. The equivalent percentages for subjects with a sedimentation rate of more then 15 mm. after 1 hour were 7.1, 8.7, 5.5, and 9.1. Thus 3.3% of the subjects with a low rate and 7.7% of those with a high rate had a distinct anaemia. These two percentages differ significantly, so that they show once again a possible connection between a high sedimentation rate and a low haemoglobin content. The high sedimentation rate which is rather frequently found among elderly people, as this investigation also indicates, is thus probably also partially explained by the rather frequent occurrence of anaemia in this group. It should, however, be pointed out that in this investigation the absolute numbers of subjects with anaemia are rather small, which is a warning to be careful in drawing conclusions. In addition, both conditions could again be dependent on other factors.

Urinary abnormalities

Consideration of Table LXVII shows that to a certain extent urinary abnormalities were also connected with the presence of a high sedimentation rate. Among the aged who had a rate of 15 mm. or less after the first hour, only albumin was found in the urine of 12% of the cases, and among those with a rate higher than 15 mm. after the first hour in 23% of the cases. There was a significant difference between the two percentages. However, no significant difference could be demonstrated for the percentage of subjects with a low rate in whom other urinary abnormalities, with or without albuminuria, were found (11.1) and that of subjects with a high rate who had these abnormalities (14.3). There was thus predominantly a connection between a high sedimentation rate and albuminuria, and on the whole this finding is not very surprising.

A FEW OTHER COMBINATIONS

Bicycling and objective health

Although it could be expected in advance that aged persons whose physical condition was rated favourably would in general bicycle (or use a bicycle with an auxiliary motor) more than those whose health was no longer very good, it nevertheless seemed useful just to find out whether these expections would agree with the observations. Consideration of Table LXVIII shows that such was indeed clearly the case. The reverse could of course also be asked: whether the fact that a number of the subjects still bicycled had not contributed to their better state of health, but this cannot be concluded from the available data.

Boredom, loneliness, and/or withdrawal

Here too it was a matter of checking the obvious assumption against the actual facts: whether aged persons who were never bored would also be less withdrawn and/or feel less lonely than those who were sometimes or often bored. The percentages in the two age groups of men and women who were never bored and who did not feel lonely and/or withdrawn were 90 and 87, and 88 and 85, and for those who were occasionally or even often bored 66 and 61, and 47 and 51, respectively. Thus the assumption was indeed in agreement with the findings. What is the cause and what the result of this correlation is difficult to determine.

RESULTS OF THE MEMORY TEST IN RELATION TO RETIREMENT

Orientation relevant to personal data

Although relatively few had difficulty with these questions, this was more often the case for the retired man than for those who said they were still working. All the men who were still employed answered the three questions correctly, while of the retired men 2-6% gave one wrong answer and 0.4-3% made two or more errors. Of the women who considered themselves to have given up actual work (for example housekeeping) 11-23% (the latter concerning the 80-84 year olds) gave one wrong answer and for those who still worked the percentage was 4-15. Two or more incorrect answers were given by 0-6% of the women who had stopped working and 0-1% of those who still worked.

Since on some points only mean percentages are given, there might in the absence of the complete data perhaps be a tendency to ascribe the better results of the non-retired to the different age composition of this category (containing relatively more younger people). However, almost consistently under this heading and with the other results now to be discussed, the results for each age group were better, even though by far not always significantly, for the subjects who had continued working than for those who had retired.

It must be repeated here too that for these and the following results the number of persons in the oldest groups who were still working is of course extremely small and the relevant percentages are thus of only very limited value.

General orientation

Of the retired men, 81-47% (the latter figure being for the group of 85 and over) answered all three questions correctly (mean 67%) in contrast to the non-retired men, 81-62% (mean 79%). In the group of women who no longer worked, again relatively appreciably fewer persons answered all three questions correctly than in the group which still worked. Among the men, however, the age groups up to 75 years showed practically no differences between the retired and the non-retired men, but appreciably fewer of the retired subjects of 75 and older answered all three questions correctly than the non-retired. Among the women the achievement in all age groups was somewhat lower among the retired than among the working subjects. Of the retired men, 66 (5.2%) were unable to answer any of the three questions correctly, for those still employed this was so for only 6 (2.0%). The results of these three questions were thus consistently less good among retired people than among those who still continued working.

Orientation in time

As in the previous set of memory questions, here too the non-retired made a better showing than those who were retired or at any rate no longer working, although here too the differences in the younger groups were only slight. A number of retired men, which with increasing age dropped from 94 to 76%, answered all three questions correctly (mean 87%), and for the non-retired the percentage was 97-88 (mean 94). For women the mean percentages were 75 and 89. Where of the retired men

29 (2.3%) answered only one of the three questions correctly and 25 (2.0%) answered none of them correctly, among the non-retired men these figures were 2 (0.7%) and 2 (0.7%).

Orientation in place

Of the 297 men who still worked, only one (in the 80-84 group) failed to answer all three questions correctly; among the retired men, however, 0.4-11% (the latter figure being for the oldest group) were not able to do so. Two percent of the non-retired women and 13% of the retired women did not answer all three questions correctly. Here too the retired subjects, although especially in the older groups, achieved poorer results than the non-retired.

Repeating the alphabet

Here those who still worked made somewhat fewer mistakes (men 26%, women 25%) than those who had stopped working (men 29%, women 33%), but in a few age groups it was the retired who achieved better results.

Counting in the series 1-4-7 *etc.*

Among the retired men 60% were able to do this and among the non-retired 72% succeeded. For women these percentages were 47 and 54, but in a few age groups the 'retired' women achieved better results than the non-retired. The percentage of aged subjects who had only one mistake differed little between the two categories, the differences being caused primarily by the number of subjects who performed very poorly.

Arithmetic operation with sums of money

In the successive age groups of retired men, 95-78% (mean 90%) had no difficulty with this problem, as did 100-88% (mean 98%) of the non-'retired' men. For women these percentages were 87-67 (mean 78) and 94-69 (mean 89). These results again point in the same direction as the preceding ones.

Repeating the alphabet, counting in series, and arithmetic problem

On the basis of the preceding results it could only be expected that the retired had succeeded less with the combination of the three types of

question than the non-retired. The results confirm these expectations; of the former group of men 45% answered all three correctly, of the latter, 55%. The same difference was demonstrated for the women. Among the non-retired men there was not even one who had missed all the questions, and of the retired about 4% were unable to answer any question correctly.

Repeating a brief story

Here too the retired did less well than the non-retired: of the former, 7-29% (mean 12%) of the men and 10-37% (mean 19%) of the women were unable to achieve even one point on this test; the percentages for the non-retired being 0-7 (mean 4) and 4-21 (mean 6). Of the retired men, 0.9-4% (mean 2%) made 5 or 6 points (= maximum), of the non-retired it was 0-8% (mean 4%). For women these percentages were 0-5 (mean 2) and 0-3 (mean 2). Four points were achieved by 2-13% (mean 9%) of the retired men and 0-18% (mean 15%) of the non-retired; and for women these percentages differed hardly at all, being 3-16 (mean 8) and 4-12 (mean 9).

Drawing two configurations from memory

The retired again made poorer results on this part of the memory test than the non-retired. Of the men in the former category, 10-34% (mean 19%) made no points at all, of the latter it was 5-29% (mean 12%). A percentage dropping with age from 51 to 22 (mean 32) of the retired men made four points (the maximum) and the percentage for non-retired men was 48-0 (19 in the 80-84 group) and the mean 39. For the women these percentages were 26-12 (mean 19) and 34-16 (mean 27).

In the separate age groups these percentages differ consistently mutually (almost always in favour of the non-retired), but usually not to a significant degree. In addition, here again it should be kept in mind that the absolute numbers on which the percentages are based are sometimes very small.

Complete memory test

It need hardly be said that with the preceding results the non-retired had a better achievement for the complete memory test than the retired. Where at least 77-25% (mean 69%) of the non-retired men made 19 or more points, for the retired it was only 67-27% (mean 54%). For women the percentages were 64-30 (mean 52) and 52-21 (mean 35).

All in all, it can be concluded from the above results that the retired did less well on the complete memory test than the non-retired. This is not to say, obviously, that the inferior results of the former are the results of retirement. The fact that their memory, at least insofar as the investigated items is concerned, still functioned reasonably well had perhaps contributed to making it possible for the non-retired to go on working.

RESULTS OF THE MEMORY TEST IN RELATION TO HEART PERCUSSION AND ABNORMALITIES OF THE LARGE BLOOD VESSELS

An attempt was made to determine whether aged persons with these conditions had achieved poorer results on the memory test than those who showed no such abnormalities. Calculations made using an $m \times n$ table excluded any correlation for women ($\chi^2 = 5.04$, $P = 0.74$, 8 degrees of freedom). It was, however, the case for men ($\chi^2 = 22.72$, $P = 0.004$, 8 degrees of freedom). It appeared impossible to analyze more closely which group of percussive abnormalities had the greatest correlation with inferior results on the memory test ($\chi^2 = 7.08$, $P = 0.30$, 6 degrees of freedom).

The effect of subjective health on the above correlation could not be determined because of the restricted number of persons with percussive abnormalities other than a moderate or dubious enlargement of the area of dullness.

CHAPTER VIII [41]

RESULTS OF ANALYSES OF VARIANCE OF COMBINED DATA

THE MUTUAL RELATION OF A NUMBER OF FACTORS STUDIED BY THE INVESTIGATION

The preceding material has treated primarily of separate factors or, in a number of cases, combinations of one factor with one or in some cases two other variables. In such a treatment it is of course impossible to trace the mutual relationship of all the factors at the same time. The last section of this report is therefore devoted to an attempt to approach this problem by correlating a number of important data with each other. It must be recognized that only those variables could be considered for correlation calculations which could be taken quantitatively. This is to say, the answers to particular questions must fit into a scale of ratings in a natural way. So, for instance, the answer to the question: Do you suffer from dizziness, fainting, or seizures? in this case cannot be arranged according to the seriousness of the affection; it is possible only to consider the absence of the particular affection more favourable than its presence. Data concerning such things as marital status, religion, and the effect of housing also cannot be rated quantitatively. Since a correlation calculation of this kind is a very sizeable undertaking, some limitations must be set even with regard to the data which can be expressed numerically.

The following variables were chosen:

Age

Subjective health, Objective health: for these factors, good health was designated by the number 1, not-so-good health by 2, and bad health by 3.

Physical capacity: three grades were set:

- 0 = entirely incapacitated = an aged person no longer able to wash and dress himself;
- 1 = partially incapacitated = a subject who could wash and dress but was no longer able to use stairs and/or walk 100 meters;
- 2 = physically fit = a subject who could perform all three activities.

[41] This chapter was prepared in co-operation with Mr. G. J. Leppink of the Statistics Department T.N.O.

Weight without clothing
Height
Sitting height
Chest circumference with expiration
Difference in chest circumference between inspiration and expiration (respiration expansion)
Respiration rate
Pulse rate
Systolic blood pressure
Diastolic blood pressure
Sedimentation rate
Total number of points obtained on memory test.

For a single variable it must be taken into account that the spread of the observations can be caused on the one hand by the circumstance that the subjects examined did not all belong to a homogenous group with regard to the absence of particular diseases which might had had an effect on that variable and, on the other hand by the normal fluctuations already present within one and the same group. Thus it can be imagined that the mean blood pressure of healthy aged persons differs from the mean blood pressure of aged persons with a heart abnormality. If in such a case the spread of the blood pressure values over all the subjects is calculated, then such spread would be greater than for either the group with no heart abnormality or than for the group with such an affection.

Since it is certainly of interest to know more about this effect of groups of diseases, four important representative groups were included in the calculations. These four groups of diseases were:

1. Diseases of the heart and major blood vessels,
2. Neurological and/or eye and/or ear abnormalities,
3. Abnormalities of muscles, joints, and bones,
4. Gastro-intestinal affections and/or diseases of air passages and respiratory organs.

The presence of one or more of the diseases in the first group was considered established when abnormalities were detected by percussion or auscultation of the heart and major blood vessels and/or a totally irregular pulse was demonstrated; absence of these conditions was considered established only when no disturbance whatever was observed by such examination as specified above.

Aged subjects who showed abnormal pupillary reaction and/or paresis or paralysis of arms and/or hands and/or legs and/or feet and/or who were totally or almost blind and/or had a cataract and/or used or needed a hearing aid, were considered to belong to the group of those who had neurological and/or eye and/or ear affections. Only those who had none

of these abnormalities or had them only in a very slight form were not placed in this group.

All subjects who showed serious orthopaedic abnormalities or symptoms of rheumatoid arthritis or arthrosis deformans of the arms and/or hands and/or of the legs and/or feet were included in the group of those who had abnormalities of muscles and/or joints and/or bones. Only those who had none of these abnormalities were not included in this group.

Finally, all those who at the time of the investigation reported themselves to be suffering from one or more of the following affections: gastric or duodenal ulcer, other abnormalities of stomach and intestines, diseases of the liver, jaundice, gall stones, haematemesis, bloody diarrhea, and/or one or more of the following: bronchial asthma, bronchitis, prolonged coughing, lung "disease", pleuritis, spitting up blood, tuberculosis of the lungs, were collected in the group of persons with gastro-intestinal affections and/or diseases of the air passages and respiratory organs.

Calculations were first carried out to determine the fluctuations normally present within one group. Corrections were therefore made for the mean difference between the specified disease groups: for each of the 16 possible combinations of disease groups the mean of each of the 15 variables just mentioned was calculated; and from the results for all the subjects falling in a given disease group the appropriate means of the relevant disease group were subtracted. This provided that spread within each group remained the same, on the one hand, but on the other hand that the mean of each group became equal to zero. With the variable corrected in such a way, the correlation matrix "within disease groups" was calculated for both men and women (see Table LXIX). It was here assumed that the disease groups (after correction of the means) did not mutually differ with regard to their correlations. For it seemed reasonable to assume that even if there were differences with regard to the correlations and with regard to the distributions within one group, these would not be great, so that this assumption would have an approximate justification. In addition, the figures were too small to prove any difference between the correlations or between the distributions.

Because of the fact that for many subjects it was necessary to note "not known" for one or more questions, the correlation matrices apply only to the 1178 men and 1000 women from whom an answer was obtained to all the questions.

For the sake of completeness it should also be said that in correlation calculations only the linear relationship of the variables is analyzed. Thus

in such cases a strongly curvilinear relation cannot be recognized, such as the possibility that with bad health a very high or very low weight might often be found; this phenomenon would thus not be expressed in the correlation coefficient. It, however, seems unlikely that such possibilities were actually present to any great extent.

The factor analysis of the correlation matrices gave 5 factors. After an orthogonal transformation, the resulting factors obtained the factor loading indicated below.

Table 76. Results of the factor analysis of the correlation matrix "within groups of diseases", in men

Tabel 76. Uitkomsten van de factoranalyse van de correlatiematrix "binnen ziektegroepen", bij mannen

Variable Kenmerk	I	II	III	IV	V
	× 100				
Age/Leeftijd	21	6	4	45	0
Subj. health evaluation/Subjectieve gezondh.	57	11	−10	−15	− 4
Object. health evaluation/Objectieve gezondh.	67	0	0	0	0
General capacity/Validiteit	−52	−14	2	−15	0
Weight/Gewicht	−23	82	0	0	0
Height/Lengte	− 9	55	− 5	−31	−21
Sitting height/Zithoogte	−12	38	−14	−32	− 1
Chest circumference/Borstomtrek	−15	78	− 3	13	26
Difference inspiration-expiration Verschil inspiratie-expiratie	−15	− 4	0	−20	−37
Respiration rate/Ademfrequentie	25	9	0	4	31
Pulse rate/Polsfrequentie	14	2	13	−12	29
Syst. tension/Syst. bloeddruk	− 1	11	77	0	0
Diast. tension/Diast. bloeddruk	4	14	77	−12	6
E.S.R./B.S.E.	28	− 5	− 4	− 2	17
Total number of points on memory test Totaal aantal punten geheugentest	−28	11	− 7	−45	0

Examination of Table 76 (men) indicates that only three factors are of any importance. Factor I represents "being well" (composed of subjective and objective health and capacity). This is thus that which the three variables have in common. For the rest, the factor loadings indicate that the mutual relationship of these three variables is not very great (see also the correlation matrix). The "being well" shows further hardly any correlation with the remaining characteristics. Factor II contains weight in first place, but height and chest circumference (and to some extent

the sitting height) also contribute to making up this factor. Factor III represents the common characteristic which is responsible for the partial relationship of systolic and diastolic blood pressure to each other.

Table 77. Results of the factor analysis of the correlation matrix "within groups of diseases", in women

Tabel 77. Uitkomsten van de factoranalyse van de correlatiematrix "binnen ziektegroepen", bij vrouwen

Variable Kenmerk	I	II	III	IV	V
	× 100				
Age/Leeftijd	21	−18	9	57	0
Subj. health evaluation/Subjectieve gezondh.	59	9	1	−21	−14
Obj. health evaluation/Objectieve gezondh.	67	0	0	0	0
General capacity/Validiteit	−49	−16	− 2	−31	1
Weight/Gewicht	−17	85	0	0	0
Height/Lengte	− 6	37	− 4	−14	−51
Sitting height/Zithoogte	− 9	35	− 9	−16	−43
Chest circumference/Borstomtrek	−15	81	0	2	29
Difference inspiration-expiration Verschil inspiratie-expiratie	−13	− 8	− 4	−16	−24
Respiration rate/Ademfrequentie	27	0	8	5	10
Pulse rate/Polsfrequentie	16	− 7	10	−17	17
Syst. tension/Syst. bloeddruk	−10	7	77	0	0
Diast. tension/Diast. bloeddruk	− 2	14	76	−15	3
E.S.R./B.S.E.	30	− 2	− 6	3	13
Total number of points on memory test Totaal aantal punten geheugentest	−28	13	− 4	−48	− 4

From Table 77 it can be seen that the above remarks apply to women as well. For them there is in addition a fourth and a fifth factor which are, however, less important than the three already mentioned (these latter factors are even less important for men, so they have been ignored). Factor IV consists of age in negative correlation with the memory test, and Factor V of a combination of standing height and sitting height.

Summarizing, the following conclusions can be drawn:

1st: The characteristics: difference in chest circumference between inspiration and expiration, sedimentation rate, pulse rate, respiration rate are independent of all other variables and of each other.

2nd: The diastolic and systolic blood pressure do show mutual correlation, but are further entirely independent of the other characteristics (such as weight).

3rd: The three variables which in this investigation can indicate the degree of health (objective and subjective health and capacity) show only little mutual relationship.

These three characteristics depend little or not at all on the remaining variables (such as blood pressure, E.S.R., etc.).

It should once more be said that the above conclusions, which are perhaps somewhat surprising, apply to material which has been as much as possible made homogenous. They thus hold only for persons in a single disease group.

To find out whether these conclusions would also hold for all persons without any correction applied for the difference between disease groups, a correlation matrix was calculated for both sexes without the relevant corrections.

As noted, for the calculation of the correlation matrix "within combination of disease groups" the means of the 15 variables per combination of disease groups were determined. In Tables 78a (page 226/227) and 78b (page 228/229) these means are shown.

It was now investigated whether the combinations of disease groups showed mutual differences which could not be explained by the fluctuations possible within the combination of disease groups, and, if such were the case, what differences these would be. To analyze such differences it is not sufficient to compare separately the combinations of disease groups with respect to each variable.

If the effect of each variable is studied separately then it can indeed be determined for each combination of disease groups within what limits the relevant variables can shift, but this is not in itself sufficient to make it possible to determine which *combinations* of variables are possible. When, for instance, on the one hand the frequency distribution of the diastolic blood pressure is known and on the other hand that of the body weight, this still does not tell what the two-dimensional distribution of the diastolic pressure and the weight is. This is only possible when the correlation coefficient is also known. To determine which combinations of variables are or are not possible, the correlation matrix must also be calculated "*between* combinations of disease groups". It is namely conceivable that two variables which show no correlation *within* the combinations of disease groups will do so *between* various combinations of disease groups. So, for example, it is found for healthy old people (see description of results with respect to the correlation matrix within combinations of disease groups) that there is no correlation between blood pressure and weight, but it could be imagined that in the group of persons with heart

Table 78a. Means of variables pe
Tabel 78a. Gemiddelden van variabele

Men/Mannen

Group of diseases * a) b) c) d) Ziekten-groep *	Mean values (rounded off to 0.1)						
	Age Leeftijd	Subject. health eval. Subj. gezond-heid	Object. health eval. Object. gezond-heid	General capacity Validiteit	Weight Gewicht	Height Lengte	Sitting height Zit-hoogte
1 1 1 1	78.2	2.0	2.0	1.4	67.2	66.6	79.4
1 1 1 0	75.0	1.4	1.2	1.4	70.1	65.5	79.9
1 1 0 1	79.8	1.7	1.8	1.2	66.7	66.8	83.9
1 1 0 0	77.6	1.3	1.4	1.6	69.1	68.0	83.0
1 0 1 1	73.8	1.8	1.9	1.5	67.0	68.8	82.0
1 0 1 0	78.6	1.4	1.3	1.4	68.2	64.5	81.9
1 0 0 1	73.5	1.6	1.6	1.5	68.8	68.6	84.0
1 0 0 0	75.8	1.2	1.3	1.8	71.4	69.2	85.2
0 1 1 1	77.3	1.8	2.0	1.5	69.5	63.0	80.0
0 1 1 0	77.0	1.1	1.3	1.5	66.7	65.5	80.1
0 1 0 1	77.0	1.4	1.4	1.6	69.3	68.8	85.1
0 1 0 0	76.1	1.1	1.2	1.9	68.4	68.0	84.3
0 0 1 1	75.0	1.4	1.4	1.7	65.8	66.8	83.3
0 0 1 0	73.8	1.2	1.2	1.6	68.3	67.0	83.7
0 0 0 1	73.4	1.4	1.3	1.8	66.5	69.2	83.8
0 0 0 0	74.0	1.1	1.1	1.9	68.8	68.6	84.6

* Explanation: a) cardio-vascular diseases/hart- en vaatziekten.
* Verklaring: b) neurol., eye and ear disorders/neurol., oog- en oorafw.
c) disorders of muscles, joints and bones/aand. v. spieren, gewrichten en botte

abnormalities both blood pressure and weight would have a higher value than in healthy persons, so that between all persons (both healthy persons and heart patients) a correlation between blood pressure and weight would be found. Calculations [42] indeed indicated that the structure of the correlation matrix "between combinations of disease groups" differed very significantly from that of the correlation matrix "within combinations of disease groups." It therefore follows from this that the combinations of disease groups mutually differ in relation to one or more of the 15 variables, which will cause no surprise. At the same time, it

[42] A so-called dispersion analysis was done. For this, see e.g. Rao. *Advanced statistical methods in biometric research*. Wiley, New York 1952, p. 370. The results of these comprehensive calculations are not included in this report, but are obtainable on inquiry from the Statistics Department T.N.O. (J.P. Coenstraat 22, The Hague, The Netherlands).

combination of groups of diseases
per combinatie van ziektegroepen

Gemiddelde waarden (op 0.1 afgerond)								Number of persons Aantal personen
Chest circumf. (exp.) Borst-omtrek (exp.)	Resp. excursion Adem-excursie	Respiration rate Adem-halings-freq.	Pulse-rate Pols-freq.	Syst. tension Syst. bloed-druk	Diast. tension Diast. bloed-druk	E.S.R. B.S.E.	Number of points mem. test Aant. pt. geheug.t.	
39.8	3.2	23.8	73.2	176.0	99.0	14.8	17.2	5
45.9	3.9	20.2	77.6	158.6	86.8	14.9	18.1	14
40.3	3.4	22.6	78.9	156.6	87.9	18.5	16.9	24
43.6	4.0	19.8	77.8	167.1	90.9	13.5	17.1	37
40.4	3.3	22.0	76.8	156.7	98.5	16.1	16.1	10
40.6	4.2	19.4	73.1	163.8	91.1	12.8	18.0	32
42.5	3.5	21.3	76.4	171.1	95.7	13.4	19.3	59
44.4	4.1	18.8	74.3	168.5	93.2	9.9	18.8	165
47.3	2.7	19.7	78.0	168.3	95.0	19.7	17.3	6
43.9	3.8	19.9	74.2	163.7	90.5	12.0	17.5	34
44.0	3.2	20.2	79.9	154.1	86.6	13.9	18.3	27
43.2	4.2	18.6	75.1	157.5	86.8	8.0	19.4	99
41.7	3.7	19.0	74.4	162.9	90.6	19.5	18.8	24
42.9	4.2	18.6	71.9	154.8	89.4	10.1	18.8	70
42.5	3.9	20.0	73.8	156.6	88.6	15.5	19.9	112
43.3	4.3	17.8	72.4	157.0	88.1	8.7	19.5	460

d) gastro-intestinal and pulmonary disorders/maag-, darm- en longaand.
0 = not present/niet aanwezig.
1 = present/wel aanwezig.

appeared that while one individual aged person, at least in this analysis, must be characterized within certain limits by all 15 values of variables, the mean of each combination of disease groups is already determined by about 8 variables for men and about 9 for women (the sex difference in the number of variables may be considered a matter of chance). In other words, this means that to indicate the mean of each combination of disease groups all 15 variables are not necessary, as given in Tables 78a and 78b, but that for men $15 - 8 = 7$ variables and for women $15 - 9 = 6$ variables are superfluous.

It should be repeated that only four disease groups are involved, namely: cardio-vascular disease; neurological abnormalities + sensory abnormalities; abnormalities of muscles, joints, and bones; and gastro-

Table 78b. Means of variables per
Tabel 78b. Gemiddelden van variabelen

Women/Vrouwen

Group of diseases * a) b) c) d) Ziekten-groep *	Mean values (rounded off to 0,1)/						
	Age Leeftijd	Subject. health eval. Subj. gezond-heid	Object. health eval. Object. gezond-heid	General capacity Validiteit	Weight Gewicht	Height Lengte	Sitting height Zit-hoogte
1 1 1 1	80.7	2.0	1.9	1.0	64.4	54.7	74.9
1 1 1 0	78.5	1.4	1.7	1.1	65.7	55.4	75.3
1 1 0 1	76.3	1.9	2.0	1.2	63.5	57.6	77.9
1 1 0 0	77.2	1.5	1.5	1.4	66.1	57.6	79.4
1 0 1 1	75.8	1.8	1.9	1.2	63.7	55.9	76.7
1 0 1 0	75.3	1.5	1.6	1.4	66.6	56.0	77.9
1 0 0 1	74.8	1.7	1.6	1.3	67.3	58.1	79.2
1 0 0 0	74.2	1.4	1.4	1.6	65.8	58.2	79.3
0 1 1 1	75.5	1.8	1.9	1.3	59.0	54.0	75.2
0 1 1 0	77.1	1.4	1.5	1.3	61.3	56.1	77.5
0 1 0 1	78.3	1.7	1.5	1.6	62.6	55.8	79.1
0 1 0 0	77.3	1.3	1.3	1.6	65.4	56.2	78.1
0 0 1 1	73.2	1.6	1.7	1.3	67.5	56.5	80.8
0 0 1 0	73.9	1.4	1.3	1.5	69.0	56.9	79.0
0 0 0 1	74.3	1.6	1.4	1.7	62.6	58.8	79.9
0 0 0 0	73.0	1.2	1.2	1.8	65.5	56.4	79.0

* Explanation: a) cardio-vascular diseases/hart- en vaatziekten.
* Verklaring: b) neurol., eye and ear disorders/neurol.-, oog- en oorafw.
c) disorders of muscles, joints and bones/aand. v. spieren, gewrichten en botten

intestinal abnormalities + lung affections, so that 16 combinations of disease groups are possible. If it may be assumed that a combination of two disease groups would be to a great extent predictable in relation to a number of variables if these are known for each disease group separately, then this would mean that the means of the 16 combinations of disease groups could be principally characterized by four variables (for there are only four disease groups). In view of the fact that 8 and 9 variables are apparently needed for the characterization of these 16 combinations of disease groups, it follows from this that the previously mentioned predictability of the combinations is not possible by itself, because then four variables would be sufficient.

The possibility of predicting a combination of disease groups from the

combination of groups of diseases
per combinatie van ziektegroepen

Gemiddelde waarden (op 0.1 afgerond)								
Chest circumf. (exp.) Borst-omtrek (exp.)	Resp. excursion Ademexc.	Respiration rate Adem-halings-freq.	Pulse rate Polsfreq.	Syst. tension Syst. bloeddruk	Diast. tension Diast. bloeddruk	E.S.R. B.S.E.	Number of points on mem. test Aant. pt. geheug.t.	Number of persons Aantal personen
39.7	3.3	23.2	78.0	193.3	101.0	29.2	14.3	12
40.2	3.1	21.0	79.0	188.3	101.0	11.6	17.4	30
33.7	3.1	22.6	81.2	175.8	91.8	23.0	17.0	20
37.0	3.8	21.4	83.0	183.8	100.5	11.8	17.5	53
37.8	2.7	23.8	77.8	174.0	90.2	18.9	18.5	26
39.5	3.1	20.5	82.1	191.4	101.4	15.3	18.1	72
40.0	3.7	21.2	79.7	179.4	97.2	16.1	18.9	56
39.0	3.3	19.9	81.7	181.8	98.9	15.2	18.1	133
34.4	2.9	21.0	78.5	164.1	86.8	12.1	17.1	11
36.6	3.1	20.0	79.1	159.9	87.8	19.9	17.5	30
38.8	3.3	19.2	80.0	168.6	90.7	17.4	18.0	25
38.9	3.2	19.6	80.3	178.0	93.8	14.4	16.9	67
40.8	3.7	19.8	73.2	160.8	89.0	14.9	19.5	24
42.3	3.4	19.6	78.7	168.6	92.6	15.4	18.3	127
38.0	3.5	18.6	79.2	162.8	89.4	15.6	18.7	74
40.1	3.7	18.2	77.3	172.7	94.1	14.0	18.5	240

d) gastro-intestinal and pulmonary disorders/maag-, darm- en longaand.
0 = not present/niet aanwezig.
1 = present/wel aanwezig.

variables as these are known for each disease group separately was investigated again for each separate combination. Here the prediction did seem to agree to some extent with the actual means, but only in the qualitative sense, so that it had little practical value.

To obtain an impression of the order of magnitude of the differences "between combinations of disease groups" in relation to the distributions which could be found "within combinations of disease groups", an analysis of variance was done for each of the variables separately. As Table LXX shows, the differences between combinations of disease groups are indeed strongly significant, but the quantity S_t, the standard deviation "between groups (after correction for the fluctuations within groups)" is much smaller than the standard deviation "within groups",

from which it follows that the difference between the 16 combinations, although significant, are not great. This was also very clearly seen from the correlation matrices which were calculated per sex from the total material, i.e. without correction for the means per variable for all combinations of disease groups. These correlation matrices were in most cases exactly the same within two decimal places as the correlation matrices "within groups". This means that the conclusions drawn for these latter matrices are also applicable to the total correlation matrices.

Since the differences between combinations of disease groups are an order smaller than the statistical fluctuations within disease groups, the fact that a given combination of disease groups is characterized by 8 or 9 mean values has no practical significance for the individual case.

Since the mutual dependence of the variables discussed above also appeared to be very complicated, a deeper analysis was not made.

Summarizing, it can be said of this part of the statistical processing of the data that:

1. The 15 more closely examined characteristics showed little mutual relation, except that there was some slight connection between objective health, subjective health, and capacity; between diastolic and systolic blood pressure, and between height and weight. There were thus, in particular, no specific correlations found between blood pressure on the one hand and height, weight, and age on the other. This is in complete agreement with the results of the study done by Bøe, Humerfelt and Wederfang which has been referred to in this report.
2. Each combination of disease groups can be described by only 8 or 9 of the 15 characteristics considered. Mathematically speaking, the choice of these 8 or 9 variables can be made in several ways. Since from the medical point of view also, more than one reasonable choice of these 8 variables can be made, further calculations on this point have not been done.
3. Characteristics of a combination of disease groups cannot be concluded from the variables of the separate disease groups alone.
4. Differences between combinations of disease groups in relation to the 15 variables considered are an order smaller than the statistical fluctuations found within disease groups.

GENERAL DISCUSSION AND CONCLUSIONS

Now that this broad survey has reached its conclusion, it is worthwhile to reconsider certain of its aspects. Has the investigation satisfied its proposed objectives? Do the results justify the costs and the efforts involved?

The primary objective of the medical investigation of the aged with the co-operation of general practitioners was to obtain a reliable impression of the general health of persons of 65 years and older in The Netherlands. The intention was thus not to get a comprehensive view of the diseases to be found in this population group. The absence of a diagnoses list is undoubtedly a lack, but since it was deliberately decided in advance not to make use of somewhat specialized apparatus and methods to establish the diagnosis such a list would have only a rather limited value. Does the enumeration of an extensive series of "normal" and abnormal symptoms give a sufficiently reliable picture of the health of the aged? To my mind it does, even though the picture is certainly not complete. There are, taken as a whole, certainly not fewer data collected than is usually the case for examinations for life insurance, employment, participation in sports, etc., and on the basis of data collected for these purposes concerning the health of the examinee, very important decisions are frequently made. The physician-investigators in nearly all cases knew the subjects whom they examined, although rather many of them reported that through this investigation they had obtained a better picture than they had previously had of the health and a number of related circumstances of these people.

The fact that not all the subjects were examined in the same way will undoubtedly result in a less sharp description of the health of this part of the population. This disadvantage, however, in my opinion, is counterbalanced by the advantage which lies in the fact that the subjects were examined by their own physicians. It would, of course, be of value for the development of socio-medical studies in this country to critically

compare the results and the reliability of an investigation done by a small permanent team and those of one done by a large number of "loosely" associated general practitioner-participants (or specialists, etc.). Such a study would greatly benefit, among others, the *Nederlands Huisartsen Genootschap* (Netherlands College of General Practitioners). Since the sample satisfies reasonable demands of representativity, I feel justified in considering that the impression of the health of the approximately 96% of the total population of the aged, from which the sample was drawn (only the estimated 4% of the aged who no longer had their own general practitioners were not included) is sufficiently reliable to provide a basis for a number of further investigations and measures. Since the Advisory Committee T.N.O. for gerontological problems when considering the present study unquestionably also had it in mind to form an opinion concerning the desirability or necessity of further investigations related to the health of the aged, it may be assumed that the present study has been of value from this point of view too. A number of problems which in this connection require further study will be discussed in this section.

The investigation also had as an objective the acquiring of a certain insight into the problem of the periodic health examination (P.H.E.). Now, this is an extraordinarily difficult question, since it cannot actually be demonstrated with great scientific exactitude that periodic physical examinations promote the health of the individual. This is not the place for a discussion of this point. Without any doubt, however, periodic physical examinations may mean the early discovery of all sorts of abnormalities. Whether this early recognition and the resultant treatment, when this is desirable and possible, always or at least almost always leads to "better" health for those affected than if they had had themselves examined on some other occasion (e.g. in case of illness), remains a question. In a number of cases this will indeed perhaps be the case. It is an obvious presumption that the first of a series of periodic health examinations will disclose the most affections. This must be kept in mind in evaluating the fact that in the present study 32-33% of the men and 23-30% of the women had abnormalities found by the physician which were previously unknown to him. In $\pm$ 5% of the total number of men and $\pm$ 6½% of the total number of women the abnormality found was considered by the examining physician to be a serious one. The principal previously unknown abnormalities were high blood pressure, heart abnormalities, abnormalities found during rectal (for men) and vaginal examination, urinary abnormalities, and tumours.

In a number of cases, early recognition of these abnormalities was

certainly of great importance to the patient. The question is now, what the result of an examination repeated a number of years later with the same persons would be. If they had not been under medical care for the entire intervening period, then unquestionably a follow-up study would again reveal many previously unknown abnormalities. However, the present investigation of the aged has shown, for instance (which was already more or less known) that so many aged individuals – 36-45% of the men and 49-64% of the women – had consulted a doctor within the three months preceding the survey, and that 35-41% of the men and 49-58% of the women thought they needed medical attention regularly. On the basis of these figures it may thus then be asked on the one hand whether a periodic medical examination would really be effective, but on the other hand it must be kept in mind that these recent and/or regular contacts with the physician had nevertheless not led to the detection of a large number of abnormalities. To my way of thinking, this last indicates that when the physician examines an aged individual (and perhaps also a younger one too) he must use even more care than is now (usually) the case. In particular, he must concentrate on percussion and auscultation of the heart and major blood vessels, rectal and vaginal examination, blood pressure and haemoglobin content measurements, and urine examination. Even though these are rather obvious examinations, especially in the case of aged patients, this does not minimize the fact that the results of this study once again urgently indicate the need for them.

In the third place, the Organization for Health Research T.N.O. hoped to find out the extent to which general practitioners were prepared and able to contribute as a group to scientific studies on behalf of public health. It has long been repeatedly demonstrated by many instances that the general practitioner has in his possession a profusion of data which after systematic collection, classification, and processing could supply important findings for the field of medicine. As a whole, however, little has been done to draw on this great store. There are various reasons for this, such as the fact that the general practitioner often does not know how to record systematically many kinds of medical observations, especially those of a minor nature and to evaluate them critically with, for example, the help of statistical methods; the general practitioner does not see the value of such investigations as the present one; the general practitioner has not time for these activities; the general practitioner simply has no interest in such things. Frequently, also, a combination of these and other factors is responsible for the fact that the general practitioner does no research work of this sort or even does no scientific investigation

of any kind. Whether especially this last is correct in all cases, with the exception of those where there is indeed no possibility at all for doing any scientific work, I doubt.

The experience with the participation of the general practitioner in the present investigation of the aged was the following: In The Netherlands a reasonably large number of general practitioners are both able and ready to give their co-operation on investigations on behalf of public health. Not only this but other investigations as well, such as those which are being or have been carried out under the auspices of the Netherlands College of General Practitioners, have established the fact that general practitioners can make sound observations and set down their data in a manner which makes it possible for them and others to process such data. Foreign publications have also shown that in England and other countries the general practitioner can make a valuable contribution to medical research.

An extremely important condition is that there be a rigourous leadership provided, and one which unceasingly counteracts the effects of inertia. It need hardly be said that the participants must be thoroughly instructed so that they know why and what they are about to investigate, the manner in which the investigation must be carried out, how the data must be interpreted, recorded, and if necessary further processed, and so that they have a mastery of any technical requirements and work as uniformly as possible when it is a case of a group investigation.

It has been my experience, as it has been for many others, that this instruction is best given orally. Written instructions can then have a certain value as memory reinforcement. In general, the actual paper work must be held to a minimum for the investigating physicians, even though this may mean a sacrifice of diversity in the data to be recorded. As much as possible the share of the participating physician should be limited to examinations which lie in the actual province of medicine, that is to say, the collection of data for which this is not the case but which are nevertheless required, such as, for instance, for the determination of a sample, should be done by others.

Especially where medical data are concerned, it is very important that the anonymity of the subjects be preserved with regard to non-medical individuals. This sometimes requires, apart from other evident considerations, that those who process the data insofar as this is not done by the investigator himself, also be doctors.

The investigation of the aged described in this report was, to the best of my knowledge, the first attempt not only in The Netherlands but also

elsewhere to collect data of a medical and other nature for as many individuals as this by so many general practitioners by means of such extensive combined examinations. In relation to the approach to a series of problems, especially those in the organizational area, it was not possible to profit from the experience of previous investigations. Although a number of "rules" are of course obvious, it was nevertheless sometimes necessary to make new provisions during the course of the investigation to bring it to the best possible conclusion. That in spite of this the end result of the extensive questioning and examination by 374 general practitioners of 3149 aged subjects chosen at random can be considered gratifying is, to my way of feeling, unquestionably evidence of the ability and willingness of the general practitioner in The Netherlands to co-operate in certain scientific investigations. The willingness is the more strongly accentuated when one considers that:

First, even though the average general practitioner in The Netherlands is usually extremely busy and the present investigation required giving ± 3 hours per subject, more than 60% of all participants examined ten or more subjects,

Second, all physicians gave their services without any recompense,

Third, the question as to whether they would be prepared to co-operate in a follow-up study, should one be made, was answered affirmatively by 70% of the ± 345 physicians who still had the same practices (among whom a small percentage agreed with certain conditions).

Various physicians also spontaneously reported after completing their examinations that they greatly valued having been able to participate.

All in all, it can be considered proven, on the basis of this investigation, that it is possible in The Netherlands for a number of general practitioners working as a group to take part in scientific research. The investigations directed by or carried out under the auspices of the Netherlands College of General Practitioners since then, which were perhaps more modestly conceived, have confirmed this point, as I have already stated.

The Advisory Committee also entertained the hope that as a consequence of their active participation in a gerontological investigation there would be increased interest on the part of many physicians in the health and diseases of the aged. The invitation to all participants to attend the Congress on the Problems of the Aged in 1956, without expense to themselves, and the sending to them of the advance material and the proceedings of this Congress must be seen in this light as well.

These indirect attempts to stimulate interest in geriatric problems had, at least as far as can be judged from a number of reactions on the part of

general practitioners, indeed some success. It is naturally difficult to evaluate how great an effect this was. Communications received after the conclusion of the investigation in such strains as: I have set up a special consulting hour for elderly patients. – I have begun to pay more attention to diseases of old age. – I would like to examine more aged persons according to the T.N.O.procedure. – I have better contact with my elderly patients. – etc., nevertheless point clearly to an increased interest in geriatrics. Since continuously more people reach advanced ages which are rather often accompanied by one or (usually) more affections, but of a kind which is often entirely or partially remediable, this "side" effect of the investigation is most welcome. Every physician should be convinced that the aged patient must be examined and treated just as carefully as any other, younger, patient. It is the general practitioner who can best help the elderly patient at the onset of illness, because he is generally better acquainted than other physicians with all the important side factors. It is clear that just as with younger patients he will often require the assistance of specialists and of well-equipped institutions for the sick. However, by far the greatest majority of the aged patients will always be treated at home, and even when they have spent some time in a hospital or reactivation centre, many will return to their homes and the care of the general practitioners. He is therefore obliged to make all possible provisions to bring the health of the aged entrusted to his care to as high a level as possible. He will not be able to achieve this alone; he will have to co-operate with others such as the district nurse, physiotherapist, occupational therapist, social worker, religious counsellors, etc. It is, however, essential that during and after his education the physician receive more training in the detection and treatment of diseases of the aged. An investigation such as the present study shows that there is still much to be done in this field.

Summarizing the above considerations, it may be stated, in my opinion, that the investigation of the aged with the participation of the general practitioner, in spite of various shortcomings, has given rather satisfying results. Whether these results weigh against the cost and effort involved cannot, at this moment at least, be said conclusively. It should not be forgotten that this investigation was also to a great extent intended to serve as the starting point for further studies and provisions. Concrete effects cannot be expected instantaneously, which is, of course, the case for almost all studies of a more or less socio-medical nature. The conversion of the results into methods of treatment, practices, provisions or measures to promote the health of any particular group is not dependent

on the medical man alone, as is usually the case in the clinic, for instance, where the cause of a disease is found and new drugs or techniques are developed to combat that disease or at least its symptoms. This is not the place to go into this subject more deeply.

It is, however, clear that often the effect of socio-medical research is felt only after a considerable time and that, in addition, many imponderables always continue to play a large part in the attempt to evaluate the results. It is my feeling that there is general agreement that broad, but really well planned, led, and analyzed socio-medical investigations make a valuable contribution to the understanding of public health problems and thus to medicine as a whole.

We must, however, become more conscious that investigations such as this one of the aged cost far more time and money than is generally recognized. It is difficult to give more than a rough estimate of how much money was actually spent. A number of specific amounts can of course be calculated rather exactly, such as the salaries of those who on a part-time basis were responsible for the organization, administration, and processing; as well as the concrete amounts spent for sending out printed matter and correspondence, meetings, and statistical analyses. Many services were also given gratuitously which would have represented great financial outlay. It is difficult, however, to estimate in actual figures, as far as time and effort are concerned, the contribution of the participants and of institutions such as the Organization for Health Research T.N.O. It is certain, and this is a factor which is still very insufficiently realized, that the organization of scientifically reliable socio-medical investigations of any proportions and the handling of the results of such work, require far more time, and therefore money, than is usually suspected. This makes it absolutely necessary that, in particular with studies of nation-wide scope, the advance planning and organization be determined as meticulously as possible. Good preparation is sometimes more than half the work.

These preparations include obtaining the agreement of the persons to be investigated. Other studies have already shown that in general aged persons are not essentially opposed to investigations affecting them. An investigation in which so many elderly people were involved and such extensive interviews and examinations had, however, as has already been said, not been made before. Fortunately the aged of The Netherlands proved as a whole to be very co-operative.

Concerning the direct results of the present study, these results were, as was expected in advance, largely not of a surprising nature. A number

of findings were already vaguely known, such as that there is rather a lot of diabetes among the aged, that anaemia and a high sedimentation rate are found rather frequently among this group; that the height of many very old people is generally less than that of the "younger" aged; that old people are often afflicted with arthrosis deformans, micturition difficulties, etc. The frequency of these conditions was, however, with a few exceptions, not known. At present we thus possess a body of specific data in connection with the physical and mental condition of the aged in The Netherlands. Consideration of the material will lead to characterize some particular results as unexpected and others as not at all surprising. In my opinion, among the results which are in a sense surprising or at least intrinsically interesting, the following can be mentioned:

First: In contradiction to previous studies, the present results indicate little pointing to a hereditary factor in longevity.

Second: The percentage of aged who considered themselves in good health dropped only insignificantly in the successive age groups. Very few aged persons found their health distinctly bad.

Third: A very important proportion of the persons examined (36-45% of the men and 49-64% of the women) had been under a doctor's care during the three months preceding the investigation.

Fourth: Very many aged (43-61% of the men and 59-71% of the women) appeared to use drugs. An investigation of the propriety of this practice and of possible measures to be taken to regulate it seems desirable.

Fifth: In each successive age group the mean values for weight, height, sitting height, chest circumference and expansion were smaller than in the preceding group. Longitudinal investigation will be required to explain this phenomenon.

Sixth: There was no relationship for women between weight (without clothes) and height in centimeters minus 100.

Seventh: The mean diastolic blood pressure showed little variation in the successive age groups; the mean systolic blood pressure, in contrast, was in general consistently somewhat higher in the older groups. The aged in The Netherlands differed little or not at all as far as their blood pressure is concerned from their contemporaries in other Western countries.

Eighth: The sedimentation rate of the erythrocytes was rather frequently high, sometimes without directly demonstrable cause. It will certainly be desirable to investigate further the E.S.R. mechanism at advanced ages.

Ninth: Many of the aged had bad teeth (above the age of 85 it was more than half). Geriatric dentistry should unquestionably be greatly extended.

Tenth: A good many aged found that they were very little helped by their eyeglasses or hearing aid, or could not afford the latter. More specific study of sight and hearing and better financial provisions would eliminate or at least reduce these difficulties in many cases.

Eleventh: A markedly high percentage of the subjects showed signs of enlargement of the liver. Further investigation, for example of the relationship with cardio-vascular disturbances, is needed. (It is also possible that in the aged the liver is more palpable due to a shift in position.)

Twelfth: Rectal and vaginal examination repeatedly revealed abnormalities. It is thus advisable to apply these two methods when possible in examining aged persons.

Thirteenth: Remarkably many aged had complaints about their extremities. Thorough examination and where possible adequate treatment, including 'rehabilitation', will have a favourable effect on just these difficulties which are especially related to advanced age.

Fourteenth: Abnormal urine content such as glucose and erythrocytes were found in rather many aged individuals. This indicates the necessity for a routine examination of the urine of elderly people for albumin, sugar, and, if necessary, sediment.

Fifteenth: During the investigation, serious abnormalities of which the doctor had not previously been aware were repeatedly found. Among these, abnormalities of blood pressure and urine took first place, then abnormalities found on rectal examination, followed by high sedimentation rate, heart abnormalities, anaemia, tumours, and abnormalities revealed by vaginal examination. This finding once again shows the necessity for a thorough medical examination of elderly persons, in particular in relation to the specific points mentioned.

Sixteenth: Very many aged appeared still to read the newspapers regularly and to listen daily to the radio for some period of time. Books and magazines were read appreciably less than newspapers. More could be done for the aged in this area.

Seventeenth: Relatively few of the aged were often bored.

Eighteenth: The large majority of persons examined said they were not lonely.

Nineteenth: Judging by the answers to the few relevant questions put, the majority of the aged had adjusted rather well to being old.

Twentieth: Consistently more men than women did well on the memory test. In the successive age groups and especially after the 80th year, consistently fewer individuals did well.

Twenty-first: A connection between the use of alcohol and tobacco during the greater part of the life and the objective and subjective health could not be demonstrated by this investigation. However, it may be that many heavy drinkers and/or smokers had already died before the study was made.

Twenty-second: Good health and doing a certain amount of work clearly went together. Further investigation of the cause for this fact is very much needed.

Twenty-third: Good objective and subjective health appeared to be accompanied by a fairly good result on the memory test. This again indicates the necessity of keeping in mind the physical condition of the subject when testing, especially of the aged.

Twenty-fourth: The physical condition did not seem to make a better impression in the summer than in the winter.

Twenty-fifth: The socio-economic level in general showed little connection with a number of circumstances connected with health.

Twenty-sixth: The number of aged living in the country who regularly consulted a doctor and had been admitted to hospital after their 65th year was relatively smaller than that for aged living in cities or urbanized areas.

Twenty-seventh: The high blood pressure found by this investigation showed little connection with any gestation disturbances.

Twenty-eighth: A distinct connection between (earlier) smoking habits and diastolic blood pressure could not be demonstrated.

Twenty-ninth: Not seldom, a combination of high sedimentation rate with low haemoglobin content was found in the persons examined.

Thirtieth: Aged persons who still worked showed a greater frequency of reasonably good results on the memory test and the separate sections of the test than did those who were retired.

Thirty-first: Certain variables, such as chest expansion, respiration rate, pulse rate, and sedimentation rate were independent of each other and of other variables. There was, for instance, also no correlation between blood pressure on the one hand and height, weight and age on the other.

Thirty-second: The variables in a combination of disease groups, for example in the group of diseases of the heart and major blood vessels and of the group of gastro-intestinal affections with or without the presence of affections of lungs and respiratory passages, appeared impossible to

conclude from the variables of these disease groups taken separately.

All these points, as has already been remarked, represent a subjective choice. It also holds for many results that comparative investigation of younger age groups is required before the data can be properly evaluated.

A serious disadvantage of the investigation described in this report and similar investigations of other population groups is always that they give a picture only of the situation at a given time. Parallel investigations of various age groups can usually also provide only an impression of the course of the life processes. To obtain insight into many changes in form and function which appear and progress, and into the etiology and relationship of these changes, longitudinal investigation is sometimes indispensable. Since such investigations require very long observation periods in man, in some cases longitudinal investigations can preferably be done on animals. This has the further advantage that in general the work can have a more experimental character. There remain certain processes, however, which can only be studied in man. Psychological investigations, for instance, must be largely done in man. In a few countries such as the United States of America, work in this field has been carried on for many years.

It is to be hoped that the study which has been reported here will also contribute to improving the health of the aged.

SAMENVATTING

In de jaren 1955-1957 stelde de Gezondheidsorganisatie T.N.O., met medewerking van huisartsen, een onderzoek in naar de gezondheidstoestand van bejaarden, nadat een proefonderzoek de mogelijkheid en wenselijkheid daarvan had aangetoond. Met belangeloze hulp van 374 huisartsen vond een onderzoek plaats naar de lichamelijke en geestelijke toestand van 3149, over het gehele land verspreide personen van 65 jaar en ouder. Het doel van dit gerontologische onderzoek was in hoofdzaak een betrouwbaar beeld te krijgen van de gezondheidstoestand en een aantal daarmede in verband staande factoren bij een representatieve steekproef van bejaarden. Elke medewerker onderzocht daartoe één of meer, doch zo mogelijk tien, personen van 65 jaar of ouder uit zijn eigen praktijk. Slechts zij, die niet meer van de diensten van een huisarts gebruik konden maken, vielen dus buiten het onderzoek (naar schatting $\pm$ 4%).

De voor het onderzoek in aanmerking komende personen werden voor elk geslacht verdeeld in vier leeftijdsgroepen, nl. 65-69, 70-74, 75-79 en 80 jaar en ouder. De aanwijzing van de te onderzoeken personen vond door loting zodanig plaats, dat elke arts minstens één bejaarde uit elk der acht groepen aan het onderzoek kon onderwerpen. De gegevens, nodig om een zo volledig mogelijk overzicht van alle tot de praktijk van een bepaalde arts behorende bejaarden op te stellen, werden verkregen uit eventueel aanwezige kaartsystemen der medewerkers, uit de bevolkingsregisters van circa 200 gemeenten met minder dan 20.000 inwoners en uit de kaartsystemen van zeer vele ziekenfondsen. Het onderzoek, dat gemiddeld $2\frac{1}{2}$-3 uur per persoon duurde, geschiedde aan de hand van een vragenformulier. Het bestond uit drie gedeelten: een uitvoerige anamnese, een nauwkeurig lichamelijk onderzoek en het stellen van een reeks vragen op sociaal of sociaal-psychologisch gebied. Een gelijksoortige werkwijze werd zoveel mogelijk bevorderd door de deelnemers in kleine werkgroepen voor te lichten en van gedachten te laten wisselen over opzet of uitkomsten van het onderzoek en voorts door het rond-

zenden van een aantal schriftelijke toelichtingen. De verkregen gegevens werden na herhaalde en uitvoerige controle der vragenlijsten door de Afdeling Bewerking Waarnemingsuitkomsten T.N.O. op kaarten overgebracht en verder grotendeels langs mechanische weg statistisch bewerkt.

Bij het uitwerken der grote hoeveelheden gegevens moest uiteraard een strenge beperking van de tellingen zowel van de enkelvoudige als van de samengestelde gegevens in acht worden genomen. Er werd daarbij echter wel rekening gehouden met hetgeen in de bijeenkomsten van medewerkers ter bespreking van voorlopige resultaten uit 1000 met de hand getelde formulieren naar voren was gekomen.

Er werd in het algemeen van afgezien ingewikkelde significantieberekeningen te maken. Dikwijls was een zo duidelijk leeftijds- of geslachtsverschil aanwezig, dat dergelijke berekeningen achterwege konden blijven. Vaak werd volstaan met slechts de geslachten of de uiterste leeftijdsgroepen met elkaar ten aanzien van bepaalde gegevens te vergelijken. Waar het toch nuttig leek na te gaan, of een verschil al of niet statistisch significant was, werd in de overgrote meerderheid der gevallen van een eenvoudige tabel gebruik gemaakt. Deze tabel geeft de dubbele standaardafwijking aan, berekend volgens de formule $2s = 2\sqrt{\frac{p(100-p)}{n}}$, bij een bepaalde steekproefgrootte (n) en een bepaald percentage (p), waarin het betreffende gegeven bij die steekproefgrootte voorkomt. Liggen twee percentages zover uiteen dat het laagste percentage plus de erbij behorende dubbele standaardafwijking toch nog kleiner blijft dan het hoogste percentage minus de daarbij behorende dubbele standaardafwijking, dan kan bij dit soort uitkomsten in het algemeen van een significant verschil worden gesproken. De drempelwaarde P is daarbij van de orde van grootte van 0,01 tot 0,05, en ligt dichter bij het eerste dan bij het tweede getal.

Slechts in die gevallen, waarbij in de tekst vermeld staat dat een bepaald verschil al of niet significant is, heeft deze berekening plaatsgevonden; in alle overige gevallen is dit dus niet geschied. Uitdrukkelijk zij overigens erop gewezen, dat het significant zijn van een verschil slechts betekent, dat het niet redelijk is dit verschil aan het toeval toe te schrijven.

ALGEMENE GEGEVENS INZAKE HET ONDERZOEK

Op de 3149 voor verdere bewerking geschikte formulieren bleven dikwijls enkele vragen onbeantwoord. Hierdoor hebben de meeste uit-

komsten betrekking op een kleiner aantal personen dan 3149. De vermelde percentages hebben steeds betrekking op het aantal personen, waarvan het betreffende gegeven bekend is geworden.

De 3149 formulieren waren van 374 artsen afkomstig; 226 artsen onderzochten elk 10 of meer bejaarden; één arts zond 141 ingevulde vragenlijsten in. Aan bijna alle 157 artsen, die minder dan 10 bejaarden hadden onderzocht, werd gevraagd, of en zo ja waarom zij een selectie hadden toegepast. Door 7 artsen werd geantwoord, dat dit inderdaad het geval was, 7 anderen meldden, dat zij ten dele geselecteerd hadden. Van 41 artsen is niet bekend, of zij uit de 10 hen aangewezen bejaarden nog een bepaalde keus hebben gedaan, waarschijnlijk is dit echter maar weinig gebeurd. De overige artsen hadden dus geen selectie toegepast. Wanneer er al sprake was geweest van selectie bleken de redenen dikwijls niet samen te hangen met de gezondheidstoestand van de aangewezen personen. De geringe mate van selectie kan dus geen invloed van betekenis hebben gehad op de uitkomsten van het onderzoek.

Van de bekend geworden mutaties bleek 38% door weigeringen te zijn veroorzaakt, 30% door overlijden van de aangewezen persoon voordat onderzoek had kunnen plaatsvinden, 18% door veranderen van huisarts (bijv. door verhuizen, opname in zieken- of verpleegtehuis e.d.) en 14% door andere omstandigheden. Slechts ten aanzien van de weigeringen is een duidelijk verschil tussen de beide geslachten aanwijsbaar: vrouwen weigerden tweemaal zoveel als mannen. Circa $2\frac{1}{2}\%$ van de oorspronkelijk aangewezen bejaarden viel door overlijden uit. Het aantal "bekende" weigeraars beperkte zich tot $\pm$ 3%.

In de opeenvolgende maanden, te beginnen met januari, werden resp. 163, 110, 104, 163, 262, 310, 356, 544, 358, 276, 285 en 199 personen onderzocht (van 19 personen is geen juist gegeven bekend). Het onderzoek blijkt dus, om overigens voor de hand liggende redenen, vooral in de zomer te hebben plaatsgevonden.

Per leeftijds- en geslachtsgroep werden de verdelingen van de bejaarden met betrekking tot de provincies, de mate van welstand, de kerkgenootschappen en de burgerlijke staat in de steekproef en in de totale bevolking (deze laatste werden van het Centraal Bureau voor de Statistiek verkregen) vergeleken. De desbetreffende berekeningen toonden aan, dat de steekproef over het algemeen redelijk representatief voor de bejaardenbevolking was. De leeftijdsopbouw van de steekproef komt echter niet overeen met die van de werkelijke bejaardenbevolking, aangezien het streven was ongeveer even grote leeftijdsgroepen in de steekproef te verkrijgen. De percentages over het totaal van mannen, van vrouwen en

bij beide geslachten tezamen zeggen dus slechts iets over de frequentie *in de steekproef*. Daarom wordt in deze samenvatting meestal opgegeven, wat de laagste en wat de hoogste frequentie van een bepaald verschijnsel in de verschillende leeftijdsgroepen was. Wanneer in de opeenvolgende leeftijdsgroepen de percentages met betrekking tot een bepaald gegeven steeds weinig van elkaar verschillen, kan echter worden aangenomen, dat ook in de totale bejaardenbevolking zulke percentages hoogst waarschijnlijk zouden worden gevonden. Daarentegen zijn de percentages in elke afzonderlijke leeftijdsgroep van de steekproef wel steeds geldig voor de gehele betreffende leeftijdsgroep. Deze geldigheid wordt slechts beperkt door het feit, dat de bejaarden die in inrichtingen verbleven en niet meer door hun huisarts werden behandeld, buiten het onderzoek vielen.

Ten slotte dient men rekening ermede te houden, dat een aantal resultaten berust op de door de ondervraagden gegeven antwoorden en dus soms maar een betrekkelijke waarde hebben.

SOCIALE GEGEVENS

Beroep. Van de mannen werd 42-53% en van de vrouwen of hun echtgenoten 38-43% door de onderzoekers tot de categorie van de arbeiders (incl. transportarbeiders) gerekend en resp. 30-35% en 21-27% tot de groep van bedrijfshoofden.

Huidige welvaartsklasse. In elke leeftijdsgroep had ongeveer de helft van de ondervraagden een jaarlijks inkomen, dat lag tussen de uitkering volgens de Noodwet Ouderdomsvoorziening en *f* 3.000,—. Hoe ouder echter de groep, hoe kleiner het aantal bejaarden was met een inkomen van meer dan *f* 3.000,—.

Huidig welvaartsniveau, vergeleken met dat op 60-jarige leeftijd. Ruim 1/4 (nl. 24-34%) van de mannen en ruim 1/3 (nl. 32-40%) van de vrouwen meende, dat het welvaartsniveau ongeveer hetzelfde was gebleven. Vanzelfsprekend was het welvaartsniveau bij veel meer bejaarden lager dan hoger geworden sinds hun 60ste jaar (percentages voor mannen 51-55% resp. 13-22%, voor vrouwen 39-45% resp. 18-27%).

Bronnen van inkomen. De uitkering volgens de Noodwet Ouderdomsvoorziening ontvingen 825 mannen (± 51%); voor 198 van deze 825 mannen (= ± 12% van *alle* mannen) was dit de enige bron van inkomsten. Voor vrouwen luiden deze aantallen resp. 886 en ± 57%, resp. 222 en 14%.

Alleen van pensioenen, vrijwillige ouderdomsverzekering of invaliditeitsrente of een combinatie van deze bronnen van inkomsten leefden 186 mannen (± 12%) en 155 vrouwen (± 10%) en alleen van inkomsten uit bezit, honoraria, salaris, loon en "overige bronnen van inkomsten" of een combinatie hiervan 252 mannen (± 16%) en 187 vrouwen (± 12%). De grote meerderheid der onderzochten bleek uit meer dan één bron inkomsten te verkrijgen.

Godsdienst. Van de mannen gaf 27-35% en van de vrouwen 26-29% op Katholiek te zijn en 52-59% van de mannen en 57-60% van de vrouwen Nederlands Hervormd of Gereformeerd; 6-18% van de mannen en 5-9% van de vrouwen deelde mede, niet bij enig kerkgenootschap aangesloten te zijn. Opvallend was, vooral bij de mannen, het hoge percentage niet-meelevenden bij de Ned. Hervormden. Het niet-meelevend lid zijn van een kerkgenootschap hing niet duidelijk samen met de leeftijd. Wel liep het percentage niet-aangeslotenen in de opeenvolgende leeftijdsgroepen aanmerkelijk terug.

Burgerlijke staat. In de opeenvolgende leeftijdsgroepen liep het aantal personen, dat nooit gehuwd was geweest, relatief steeds weinig uiteen (mannen 4-7%, vrouwen 8-12%). Significant meer vrouwen dan mannen bleken ongehuwd te zijn gebleven. Ook waren er veel meer weduwen dan weduwnaren.

Wijze van wonen. Vooral in de jongste groepen bleken zeer veel vrouwen zelfstandig zonder (of met slechts enige) hulp te wonen. Tot deze groep behoorden vele gehuwde vrouwen; de hulp van de echtgenoten werd zelden van grote betekenis geacht. Dit in tegenstelling met de hulp van de vrouwen aan hun mannen, die bijna steeds wel essentieel werd gevonden voor een zelfstandige wijze van wonen. Uiteraard daalden de percentages van zowel de zelfstandig "zonder hulp" wonende vrouwen als van de samen met hun echtgenoten zelfstandig wonende mannen aanzienlijk in de opeenvolgende leeftijdsgroepen (bij de vrouwen een daling van 62 tot 14%, bij de mannen van 58 tot 12%). Van betaalde hulp was in 6-9% en van onbetaalde hulp in 4-9% der gevallen sprake. Het percentage in- of samenwoningen bij of met kinderen steeg uiteraard snel met toenemende leeftijd: bij mannen van 15 tot 47%, bij vrouwen van 18 tot 42%. In verpleegtehuizen en "en pension" verbleef ruim 8% van alle onderzochten. Deze laatste percentages zijn echter niet geheel representatief.

Huur-, pension- of verpleegprijzen. Ruim 1/4 (nl. 21-29%) van de mannen en bijna 1/3 (nl. 30-33%) van de vrouwen betaalde ten tijde van het onderzoek minder dan *f* 5,— per week aan huur. Voor een belangrijk deel der onderzochten, vooral in de jongere leeftijdsgroepen (42-48% van 65- tot 75-jarigen), was een huur van *f* 5,— tot *f* 10,— per week gebruikelijk.

Karakter van de woonplaats. De gegevens betreffende dit punt vertoonden slechts zeer geringe leeftijds- en sexeverschillen. Ruim 55% van de onderzochten woonde op het "platteland" (gemeenten met minder dan 20.000 inwoners), ruim 10% in z.g. verstedelijkte plattelandsgebieden (gemeenten met 20.000-50.000 inwoners) en de rest, bijna 1/3, was woonachtig in grotere steden.

Ziekenfondslidmaatschap. Minder vrouwen (nl. 11-17%) dan mannen (nl. 15-22%) waren nooit lid van een ziekenfonds geweest. Bij de laatsten nam in de opeenvolgende leeftijdsgroepen, met uitzondering van de oudste, dit percentage geleidelijk aan iets af. De laatste 2 jaren voor het onderzoek (1955-1957) waren slechts weinigen (1-4% van de mannen en 3-5% van de vrouwen) tot het ziekenfonds toegetreden. In alle leeftijdsgroepen, op de oudste na, was steeds ongeveer 1/3 van de onderzochten al meer dan 35 jaar lid van een ziekenfonds. Ruim 80% der ondervraagde bejaarden was dus bij een ziekenfonds aangesloten.

ANAMNESTISCHE GEGEVENS

A. Familie-anamnese

Overlijdensleeftijd der ouders. De bij dit onderzoek verkregen gegevens wezen, in tegenstelling met uitkomsten van andere onderzoekingen, weinig in de richting van een erfelijkheid van een lange levensduur. De gedurende de laatste decenniën sterk verbeterde levensomstandigheden zijn uiteraard mede van invloed geweest op deze uitslag.

Gezondheid van de echtgeno(o)t(e). De mannen achtten in significant minder gevallen dan de vrouwen de gezondheid van hun echtgenoten goed.

Kinderen. De oudere groepen hadden gemiddeld iets grotere aantallen kinderen dan de jongere; een reeds bekend feit. Het aantal kinderen, dat de onderzochte groep van bejaarden gemiddeld had, bedroeg ongeveer 4. In beginsel zouden op het ogenblik dus vrij veel bejaarden hulp of bijstand van hun kinderen kunnen ontvangen.

Van de mannen, die kinderen hadden of hadden gehad, had in de op-

eenvolgende leeftijdsgroepen resp. 38%, 50%, 58%, 63% en 68% één of meer kinderen verloren, voor de vrouwen waren deze percentages resp. 45, 57, 58, 64 en 77. Het merendeel der bejaarden blijkt dus één of meer kinderen in de loop der jaren te hebben verloren.

B. Persoonlijke anamnese

Subjectieve gezondheidstoestand. Het overgrote deel der bejaarden, nl. 75-82% van de mannen en 59-68% van de vrouwen achtte de eigen gezondheidstoestand goed. Met stijgende leeftijd daalde het percentage van hen, die zich gezond voelden slechts heel weinig. In vrijwel elke leeftijdsgroep hadden significant meer vrouwen dan mannen klachten over hun gezondheidstoestand. Het percentage bejaarden, dat de eigen gezondheid slecht vond, was heel klein, 1-3% voor mannen en 2-5% voor vrouwen. Het laatste percentage steeg enigszins in de opeenvolgende leeftijdsgroepen.

Invloed van de huisvesting op de lichamelijke en geestelijke toestand. In tegenstelling met hetgeen enigszins werd verwacht, gaven slechts betrekkelijk weinig bejaarden, 5-9% van de mannen en 10-16% van de vrouwen, te kennen, dat hun huisvesting nadelig voor hun gezondheid was. In dit opzicht was er een significant verschil tussen de twee sexen, al bestond dit niet in elke leeftijdsgroep afzonderlijk. Een bepaalde leeftijdsinvloed viel niet aan te wijzen. De zowel door mannen als vrouwen meest geuite klachten betroffen de vochtigheid ($\pm$ 2% bij de mannen en $\pm$ 3% bij de vrouwen) en de onprettige sfeer in huis (resp. $\pm$ 2% en $\pm$ 3%).

Medische hulp. Ongeveer 2/5 (nl. 36-45%) van de mannen en 3/5 (nl. 49-64%) van de vrouwen had in de 3 maanden voorafgaande aan dit onderzoek onder geneeskundige behandeling gestaan. De jongste groep, van 65-69 jaar, deed dit naar verhouding nog het minst. Vooral bij de vrouwen, bij wie het percentage overigens nog 49 was, was dit het geval (bij de mannen 39%). Van de mannen had 11-19% en van de vrouwen 5-12% gedurende de laatste 5 of meer jaren geen geneeskundige hulp ingeroepen.

Ongeveer 1 op de 5 mannen en 1 op de 3 vrouwen had gedurende het laatste jaar geen arts geraadpleegd, hetgeen waarschijnlijk betekent dat althans dit deel der bejaarden vrijwel zeker niet aan een (ernstige) langdurige ziekte leed.

Hart-, vaat- en nierziekten stonden in de reeks van de voornaamste aandoeningen, waarvoor medische bijstand was gevraagd, zoals kon worden

verwacht op de eerste plaats (19-33%), met een significant hoger percentage voor vrouwen dan voor mannen in alle leeftijdsgroepen met uitzondering van die van 80-84 jaar. Hierop volgde de groep van „overige ziekten" (17-28%), met vrijwel gelijke percentages voor beide geslachten. Ook de groep van de ziekten van luchtwegen en ademhalingsorganen (zonder maligne nieuwvormingen en t.b.c.) was zeer belangrijk (12-24%), hierin overwogen in alle leeftijdsgroepen, op één na, de mannen in significante mate.

Veel meer vrouwen (49-58%) dan mannen (32-42%) raadpleegden geregeld een arts. Een geregelde raadpleging vond in de oudere groepen niet veel meer plaats dan in de jongere. De voornaamste aandoeningen, waarvoor deze geregelde raadpleging nodig werd geacht, waren weer hart-, vaat- of nierziekten. Bijna de helft zowel van de mannen als van de vrouwen die geregeld naar een arts gingen, deed dat voor één of meer ziekten uit deze groep van aandoeningen.

Meer vrouwen (46-63%) dan mannen (37-53%) bleken ook een specialist te hebben geraadpleegd na het 65ste jaar. Ook de specialist werd het meest voor de aandoeningen in de categorie van hart-, vaat- en nierziekten geconsulteerd, al was de groep van „overige ziekten" hier veel belangrijker dan bij het geregeld inroepen van medische hulp in het algemeen. (In eerstgenoemde uitslag waren echter meestal de consulten van een oogarts ten behoeve van brilvoorschriften inbegrepen.) Van de mannen die een specialist raadpleegden, deed in de opeenvolgende leeftijdsgroepen 4, 8, 13, 18 en 27% dit voor een prostaatlijden. Bij het beschouwen van dit soort getallen dient men wel steeds te beseffen, dat de jongere groepen in verband met de kortere periode na het 65ste jaar naar verhouding veel minder reden zullen hebben gehad zich tot een specialist te wenden dan de oudere groepen.

Van de mannen was 16-45% en van de vrouwen 21-40% na het 65ste jaar een of meermalen in een ziekenhuis opgenomen geweest. De leeftijd is hierbij natuurlijk weer een belangrijke factor. Uit de jongere groepen waren uiteraard minder personen opgenomen dan uit de oudere, omdat de eerstgenoemden gedurende kortere tijd het risico van het krijgen van een tot ziekenhuisopname leidende ziekte hadden gelopen dan de laatstgenoemden. Bovendien hadden de jongere bejaarden wellicht minder ziekten, die opname noodzakelijk maakten, en beschikten zij soms over meer mogelijkheden om elders dan in een ziekenhuis te worden verpleegd dan de oudere bejaarden.

Sommige aandoeningen werden in laatstgenoemd verband naar verhouding meer genoemd dan bij de eerder vermelde vormen van medische

hulpverlening, bijv. prostaatlijden, andere daarentegen minder, zoals hart-, vaat- en nierziekten en diabetes.

Klachten over het slapen, de eetlust, ontlasting en urinelozing. Een groot deel van de mannen en een nog groter deel van de vrouwen had een of meer der bovengenoemde klachten. Hoe ouder de leeftijdsgroepen, hoe geringer het verschil tussen de beide geslachten; boven de 85 jaar was het niet meer significant. In de opeenvolgende leeftijdsgroepen nam het aantal klagers duidelijk toe: bij mannen zeer sterk van 29% tot 55%, bij vrouwen van 50% tot 58%. Klachten alleen over het slapen werden het meest geuit en wel ongeveer dubbel zoveel door vrouwen (19-23%) als door mannen (7-13%). In totaal klaagde 16-20% van de mannen en 32-36% van de vrouwen over slaapstoornissen. Over de eetlust alleen of in combinatie met een andere gestoorde functie werd zeer weinig geklaagd (door 3-5% van de mannen en 7-9% van de vrouwen). De stoelgang alleen of in combinatie met andere functies vormde dikwijls een reden tot klagen, nl. bij 8-27% van de mannen en 18-29% van de vrouwen.

Drank- en tabaksgebruik. Het aantal bejaarde vrouwen dat zei gedurende het grootste deel van het leven alcoholica in noemenswaardige hoeveelheden te hebben gebruikt, was zeer klein (81). Bij de mannen lag de zaak wel iets anders: 38-46% zei af en toe of geregeld alcoholische dranken te hebben gebruikt. De borrel had de meeste aantrekkingskracht gehad. De oudsten onder de bejaarden schenen (vroeger) wat meer alcoholica en met name borrels te hebben geconsumeerd dan de jongsten onder hen.

Wat het roken betreft, dit had bij de vrouwen in nog mindere mate een rol gespeeld. Slechts 31 vermeldden gedurende het grootste deel van hun leven te hebben gerookt. Van de mannen had slechts 13-17% nooit of praktisch nooit gerookt. Onder de oudsten waren wat meer niet-rokers dan onder de jongsten. Deze laatsten rookten veel meer sigaretten en minder een pijp dan de eersten, die ook meer pruimden (of dit alles vroeger hadden gedaan). Ruim 1/4 van alle mannen, in alle leeftijdsgroepen, gaf op voornamelijk sigaren te roken of dit te hebben gedaan. Deze uitkomsten dienen uiteraard met het nodige voorbehoud te worden beschouwd!

Ongevallen. Ruim 1/5 van alle onderzochte bejaarden was na het 60ste jaar een ongeval van enige betekenis overkomen. Bij vrouwen was dit iets meer het geval geweest dan bij mannen, hetgeen te wijten is aan het relatief veel hogere percentage vrouwen, dat binnenshuis een ongeval had gehad (9-23%; mannen 2-6%), een percentage dat vrijwel in elke

leeftijdsgroep hoger ligt dan de som van ongevallen buitenshuis plus bedrijfsongevallen (7-10%), die juist veel meer bij mannen (13-21%) dan bij vrouwen (7-10%) waren voorgekomen. De oudere leeftijdsgroepen gaven aan meer ongevallen te hebben gehad dan de jongere; zij hadden echter ook langer risico gelopen.

Van de 310 mannen, die een ongeval rapporteerden, had 40% schaafwonden, distorsies e.d. opgelopen, 28% een fractuur en 13% een scheteltrauma (bijv. commotio). Voor 351 vrouwen zijn de betreffende percentages 31, 45 en 10. Ongevallen resulteerden dus bij de laatsten wat meer in fracturen. Bij stijgende leeftijd zag men bij beide geslachten ook meer fracturen optreden. Verbrandingen en vergiftigingen waren procentueel van gering belang.

ANAMNESTISCHE GEGEVENS OVER BEPAALDE ZIEKTEN OF GROEPEN VAN AANDOENINGEN

„*Reumatiek*". Klachten hierover werden bij mannen in de opeenvolgende leeftijdsgroepen in resp. 22, 23, 24, 19 en 21% der gevallen, en bij vrouwen in resp. 34, 36, 39, 34 en 31% der gevallen vernomen. Tussen de beide sexen bestond echter een significant verschil ten aanzien van het vóórkomen van deze klachten. Van de mannen zou 64%, van de vrouwen 52% *nooit* enige last van „reumatiek" gehad hebben.

Duizelingen, flauwten, toevallen. Slechts zeer weinig bejaarden zeiden aan flauwten (20 mannen, 29 vrouwen) of toevallen (7 mannen en 3 vrouwen) te lijden. Duizelingen zouden bij 13-21% van de mannen en 18-32% van de vrouwen voorkomen; naarmate de groep ouder was, werd dit verschijnsel meer vermeld. Steeds klaagden (zij het niet in significante mate) meer vrouwen dan mannen over duizeligheid. Van de mannen zei 75% en van de vrouwen 60% *nooit* van duizelingen, flauwten of toevallen last te hebben gehad.

Breuken. Hoe ouder de leeftijdsgroep, hoe meer melding werd gemaakt van een hernia. Bij mannen was het betreffende percentage in de opeenvolgende groepen resp. 10, 15, 17, 23 en 23, bij vrouwen 3, 4, 5, 6 en 8; bij eerstgenoemden is het verschil tussen de jongste en de oudste groep dan ook duidelijk significant. Ook tussen de beide geslachten is het verschil steeds duidelijk. Van de mannen had 65% en van de vrouwen 89% – volgens hun zeggen – *nooit* last van een breuk gehad.

Aandoeningen van longen en luchtwegen. In de opeenvolgende leeftijdsgroepen zei 17, 15, 16, 17 en 23% van de mannen en 10, 10, 13, 16 en 17% van de

vrouwen te lijden aan één of meer aandoeningen of verschijnselen van de longen of luchtwegen. Bij de groep mannen zou deze groep aandoeningen dus significant meer voorkomen dan bij de groep vrouwen. De oudsten schenen wat meer lasten van deze aard te hebben dan de jongeren. Bronchitis was de meest genoemde, als voornaamste betitelde, ziekte (7-12% van de mannen, 6-12% van de vrouwen). Asthma bronchiale werd door 26 mannen en 16 vrouwen als voornaamste aandoening gemeld. Zowel van de mannen als van de vrouwen zou 69% *nooit* last van een dezer aandoeningen of verschijnselen hebben gehad.

Hart- en vaataandoeningen. Een met de leeftijd relatief toenemend aantal mannen, nl. van 28% in de jongste groep tot 43% in de groep van 80-84 jaar en 37% in de groep van 85 jaar en ouder, en een daarentegen bij het ouder worden relatief vrijwel gelijkblijvend aantal vrouwen, nl. 45-49%, liet klachten hierover noteren. De groep mannen had significant minder klachten dan de groep vrouwen. Het meest genoemde, als voornaamste klacht beschouwde, verschijnsel was wel de kortademigheid bij inspanning: deze werd, in met de leeftijd toenemende mate, bij 8-15% van de mannen en bij 13-15% van de vrouwen vermeld. „Pijn in de hartstreek" en „beklemming op de borst" werden door 4-9% van de mannen en 5-10% van de vrouwen aangegeven, een duidelijke leeftijdsinvloed op deze frequenties was niet aantoonbaar. Van de mannen gaf 63% en van de vrouwen 47% aan, *nooit* klachten van de kant van het hart te hebben gehad.

Bloeddrukafwijkingen. Een veel groter aantal vrouwen dan mannen zei een bloeddrukafwijking te hebben, nl. resp. 32-39% en 16-21%. Bij beide geslachten was in de frequentie daarvan niets te bemerken van een leeftijdsinvloed. Een te lage bloeddruk zou bij 3% van de ondervraagde mannen (1384) en bij 2% van de ondervraagde vrouwen (1380) voorkomen. Een sterk verhoogde bloeddruk daarentegen kwam volgens de opgaven bij 40 mannen en 134 vrouwen voor. Ongeveer 80% van de 1330 mannen en 60% van de 1304 vrouwen die de vragen ten aanzien van een vroegere of huidige aanwezigheid van een bloeddrukafwijking hadden beantwoord, zei *nooit* daarvan last te hebben gehad.

Aandoeningen van het maag-darmkanaal en lever. Slechts betrekkelijk weinig bejaarden gaven een bevestigend antwoord op de vraag, of zij aan een maag- of duodenumzweer, andere aandoeningen van de maag of darmen, leverziekten, geelzucht, galstenen, bloedbraken of bloeddiarree leden, nl. 7-10% van de mannen en 12-15% van de vrouwen. Galstenen werden door 16 mannen en door 81 (!) vrouwen gemeld. Van de mannen had

86%, van de vrouwen 61% volgens hun zeggen noch vroeger, noch thans ooit last gehad van maag- of darmaandoeningen.

Suikerziekte en andere stofwisselingsziekten. Het percentage van mannen, die zeiden diabetes (mellitus) te hebben, was in de opeenvolgende leeftijdsgroepen: 3,4; 2,5; 3,7; 6,5 en 5,1 – in de oudere groepen zou dus op grond van deze uitkomsten de ziekte iets meer voorkomen. Bij de vrouwen was dit niet het geval: de betreffende percentages waren resp. 6,4; 7,4; 7,1; 7,8 en 6,0. Bij de vrouwen kwam diabetes echter wel significant meer voor dan bij mannen. Van de mannen zou 95%, van de vrouwen 91% *nooit* suikerziekte of een andere stofwisselingsziekte hebben gehad.

Aandoeningen van het urogenitaalstelsel. Hiervan was de frequentie 4-12% bij mannen en 6-10% bij vrouwen. Bij mannen steeg in elke opeenvolgende leeftijdsgroep het betreffende percentage, nl. 4, 4, 7, 10, 12%, bij vrouwen was van een leeftijdsinvloed niet veel te bespeuren. Aandoeningen van de blaas werden het veelvuldigst opgegeven, nl. door 55 mannen en 63 vrouwen. Van de mannen zou 81% en van de vrouwen 70% *nooit* klachten of stoornissen over deze organen hebben gehad.

Tropische ziekten. Slechts 3 mannen en 6 vrouwen, steeds uit verschillende leeftijdsgroepen, beantwoordden de vraag, of zij op het ogenblik van het onderzoek lijdende waren aan tropische ziekten, bevestigend. Van de mannen had 96%, van de vrouwen 98% volgens hun zeggen *nooit* tropische ziekten gehad.

Aanwezigheid van slechts één ziekte of groep van aandoeningen tegelijk. Van 409 mannen, d.i. 25% van alle mannen in de steekproef en 336 vrouwen, d.i. 22% van alle onderzochte vrouwen, werd vermeld, dat zij slechts aan één ziekte of één groep van ziekten uit de vorengenoemde reeks zouden lijden. De belangrijkste waren voor mannen: „reumatiek" 103 gevallen, hartlijden 77, breuken 55; en voor vrouwen: „reumatiek" 91, hartlijden 76, tensie-afwijkingen 69.

Gelijktijdige aanwezigheid van twee of meer ziekten of twee of meer groepen van aandoeningen. Gelijktijdig 2 (doch niet meer dan 2) ziekten of 2 groepen van ziekten zouden in de opeenvolgende leeftijdsgroepen aanwezig zijn bij 140 (40%), 120 (30%), 178 (43%), 136 (46%) en 38 (27%) mannen en bij 146 (42%), 188 (48%), 160 (42%), 134 (50%) en 68 (45%) vrouwen.

Wanneer álle combinaties van twee of meer ziekten werden nagegaan, bleken de meest voorkomende combinaties van 2 ziekten of ziektegroepen

bij mannen te zijn: hartlijden + tensie-afwijkingen (133 gevallen, verwachting, wanneer beide aandoeningen geheel onafhankelijk van elkaar zouden voorkomen, 75), hartlijden + longaandoeningen (123, verwachting 73) en hartlijden + duizelingen e.d. aandoeningen (122, verwachting 75) en bij vrouwen: hartlijden + tensie-afwijkingen (307, verwachting 230), hartlijden + „reumatische" aandoeningen (263, verwachting 228) en hartlijden + duizelingen e.d. (228, verwachting 169). Voorts bleek uit deze en andere gegevens duidelijk dat meer vrouwen dan mannen melding maakten van twee of meer ziekten of groepen van aandoeningen of verschijnselen. In de oudere leeftijdsgroepen kwamen iets meer verschijnselen of ziekten gelijktijdig voor dan in de jongere.

Doorlichtingen. Het percentage bejaarden, dat *nooit* was doorgelicht, steeg snel in de opeenvolgende leeftijdsgroepen: van 6 bij mannen van 65-69 jaar tot 38 bij mannen van 85 en ouder; de resp. percentages voor vrouwen zijn 2 en 42. De overgrote meerderheid was doorgelicht ter gelegenheid van een massa- of bedrijfsdoorlichting.

Gewichtsveranderingen. Bij de meerderheid der bejaarden zou volgens hun eigen mening het lichaamsgewicht de laatste twee jaren ongeveer hetzelfde zijn gebleven. In elk der leeftijdsgroepen was dit bij ongeveer 2/3 van de mannen (65-70%) en 3/5 van de vrouwen (57-62%) het geval. Significant meer vrouwen dan mannen hadden een gewichtsverandering geconstateerd, in de afzonderlijke leeftijdsgroepen kon echter geen significant verschil tussen de beide geslachten worden geconstateerd. Meer bejaarden, en dan vooral de vrouwen onder hen, waren afgevallen dan in gewicht toegenomen. De toe- of afname was in de meerderheid der gevallen volgens hun zeggen beperkt gebleven tot minder dan 5 kg.

Bijzondere voedingsgewoonten. Aanzienlijk meer vrouwen (45-56%) dan mannen (21-29%) hadden ten tijde van het onderzoek bijzondere voedingsgewoonten. Tussen de opeenvolgende leeftijdsgroepen bestond geen belangrijk verschil, al volgden de oudsten naar verhouding wel het minst een dieet. De belangrijkste bijzondere voedingsgewoonte betrof het zoutloze of zoutarme dieet: 11-18% van de onderzochte mannen en 23-33% van de vrouwen volgde zulk een dieet. Bij mannen speelden de overige dieetsoorten slechts een geringe rol, bij vrouwen (6-11%), vooral in de jongste groep nl. 11%, was het vetarme dieet van betekenis.

Geneesmiddelengebruik. Zoals, na het vermelde over het inroepen van medische hulp, valt te verwachten, gebruikten veel minder mannen (43-61%) dan vrouwen (59-71%) geneesmiddelen. Op zichzelf bleek dit

gebruik bij beide geslachten echter zeer aanzienlijk te zijn. Bij mannen nam het met de leeftijd zeer toe (van 43% in de groep van 65-69 jaar tot 61% in de groep van 85 jaar en ouder), bij de vrouwen was het steeds hoog, alleen de jongste groep bleef met 59% achter bij het gemiddelde van 67% voor alle vrouwen tezamen. Het merendeel van de bejaarden die medicijnen gebruikten, zei dit op voorschrift van de arts te doen: 25-37% van alle ondervraagde mannen en 28-43% van de vrouwen. Ruim 10% van alle onderzochten nam alleen geneesmiddelen volgens eigen inzicht; ten aanzien van dit punt bestond geen verschil tussen beide geslachten, noch was een bepaalde leeftijdsinvloed aantoonbaar.

Bij een nadere analyse van de 328 mannen en 467 vrouwen, die uitsluitend volgens eigen inzicht medicijnen of deze in combinatie met de door de arts voorgeschreven geneesmiddelen gebruikten, bleek dat het in bijna de helft der gevallen om laxeermiddelen ging: 26-50% van de mannen nam af en toe en 5-15% geregeld laxantia; voor vrouwen waren deze percentages 26-44 en 7-27. Het gebruik van slaapmiddelen was eveneens aanzienlijk: 6-16% der mannen en 13-26% der vrouwen meende ze af en toe of geregeld nodig te hebben. Het geregelde gebruik vond vooral in de oudere leeftijdsgroepen plaats, het gebruik „af en toe" in de jongere groepen. Vitaminepreparaten werden door niet minder dan 16% van de groep van 65-69 geregeld gebruikt (maar door mannen van 85 en ouder in het geheel niet) en door 9-12% van de vrouwen. Het gebruik van kruiden was minimaal, doch dat van alle „overige" middelen weer hoog en wel bij mannen (26%) significant meer dan bij vrouwen (19%).

Verblijf in de tropen. Slechts 6% van de mannen en 2½% van de vrouwen was in de tropen geweest.

Vroegere sportbeoefening. Van de onderzochte mannen had 61-82% en van de vrouwen 90-93% nooit aan sport gedaan. Hoe jonger de leeftijdsgroepen, hoe meer de leden daarvan vroeger een sport beoefend hadden (39% van de mannen van 65-69 jaar en slechts 18% van de mannen van 85 jaar en ouder). De sportbeoefening kon, zeker bij vrouwen, geen grote invloed op de waargenomen gezondheidstoestand hebben gehad.

Fluor. Van de ondervraagde vrouwen had 64-74% hiervan nooit last gehad, bij 23-29% was dit vroéger wel het geval geweest. Slechts 3-8% had ten tijde van het onderzoek nog last van fluor, en 2% had eerst sinds kort klachten hierover. De oudere groepen klaagden minder erover dan de jongere groepen.

Afwijkingen tijdens zwangerschap, bevalling of kraambed. Van de 1265

vrouwen, die op dit punt konden antwoorden, had 73-84% dergelijke afwijkingen niet gehad. Hoe ouder de leeftijdsgroep, hoe minder afwijkingen werden gemeld.

Leeftijd menopauze. Uit de gegevens kon niet worden afgeleid, dat bij vrouwen uit de jongere groepen de menopauze eerder of later was opgetreden dan bij de oudere leeftijdsgroepen. De spreiding van de leeftijden, waarop de menopauze inzette, bleek groter te zijn dan veelal wordt aangenomen. Niet minder dan 13% van de vrouwen deelde mede, dat de menopauze op of na het 52ste jaar was begonnen.

Hinderlijke klachten, waarvoor de arts niet is geraadpleegd. Slechts een klein deel der ondervraagde bejaarden in elke leeftijdsgroep, en bij beide geslachten, deelde mede hinderlijke klachten te hebben, waarvoor echter de arts niet was geraadpleegd (mannen 7-11%, vrouwen 8-12%). De belangrijkste redenen voor het dan niet inroepen van medische hulp, waren de toch door de bejaarden gering geachte betekenis van deze klachten (nl. bij 3-5% van de onderzochte mannen en vrouwen) en de mening, dat „er toch niets aan te doen was" (2-5% bij mannen en 3-5% bij vrouwen). Afstandsbezwaren, financiële bezwaren of „bescheidenheid" waren factoren van zeer geringe betekenis.

Huishoudelijke en andere activiteiten, mede in verband met de gezondheid.

Koken. Er waren slechts weinig mannen die zelf kookten. Het percentage was tussen 70 en 85 jaar (8-10) zelfs nog wat hoger dan vóór het 70ste jaar (5). Van de vrouwen tot 80 jaar kookte 70%, na het 85ste jaar zou nog 30% dit zelf doen.

Van de 1451 mannen, die zeiden niet zelf te koken, beweerde een met de leeftijd snel dalend percentage van 78 in de jongste tot 43 in de oudste groep het zo nodig wel zelf te kunnen doen. Voor 499 vrouwen waren deze percentages resp. 69 en 32. Slechts 12% van alle mannen, doch daarentegen 41% van alle vrouwen gaf lichamelijke of geestelijke stoornissen op als oorzaak voor het niet zelf kunnen koken. Been- en armklachten in de eerste plaats en algehele zwakte in de tweede plaats vormden de belangrijkste redenen.

Boodschappen doen. Van de mannen van 70-85 jaar deed 35-43% zelf de boodschappen. Bij vrouwen daalde het percentage in elke volgende leeftijdsgroep snel, in totaal van 68 tot 14. De belangrijkste belemmeringen vormden weer been- en armbezwaren, en verder kortademigheid en algemene zwakte.

Geld beheren. Meer dan de helft van de mannen (54-59%) en van de vrouwen (40-70%) regelde zelf de geldzaken en beheerde zelf het geld, met uitzondering van de oudste groep vrouwen (40%). In de jongere groepen regelden meer vrouwen dan mannen zelf hun geldzaken, het verschil is echter meestal niet significant. Opvallend was, dat reeds in de jongste leeftijdsgroep 1/3 van de mannen de regeling der geldzaken aan hun vrouwen overliet. Bij mannen was ook geen leeftijdsinvloed op dit punt te bespeuren, bij vrouwen loopt het percentage wel terug bij stijgende leeftijd. Bij deze activiteit spelen uiteraard de geestesafwijkingen als reden voor het niet verrichten ervan de belangrijkste rol. De leeftijdsinvloed was daarbij onmiskenbaar, bij mannen steeg het betreffende percentage van 8 in de groep van 65-69 jaar tot 25 in de oudste groep, bij vrouwen van 3 tot 26.

Wassen en kleden. In de opeenvolgende leeftijdsgroepen zei resp. 3%, 3%, 6%, 8% en 15% van de mannen en 3%, 4%, 8%, 17% en 26% van de vrouwen moeilijkheden bij het zich wassen en kleden te hebben.

Traplopen. Een met toenemende ouderdom van 11 tot 30 stijgend percentage mannen zei niet of moeilijk te kunnen traplopen. Voor vrouwen lagen de uitkomsten aanmerkelijk ongunstiger, nl. bij resp. 18% en 58%. Dat bij traplopen kortademigheid de belangrijkste belemmering vormde, gevolgd door been- en/of armklachten, spreekt wel vanzelf: bij 5-12% resp. 2-9% van alle onderzochte mannen en 9-20% resp. 7-21% van alle onderzochte vrouwen was dit het geval. Bij de oudere groepen werden de arm- en/of beenklachten naar verhouding belangrijker. Ook algehele zwakte werd dan van meer belang.

Honderd meter lopen. De percentages van hen, die geen moeite hadden om deze afstand af te leggen, lagen slechts weinig hoger dan de in de vorige paragraaf genoemde.

RESULTATEN VAN HET ALGEMENE ONDERZOEK

Resultaten van metingen

De waarden van de bepalingen van gewicht, lengte, zithoogte, borstomtrek en borstomtrekverschil bij expiratie en inspiratie blijken in elke opeenvolgende leeftijdsgroep kleiner te zijn. Dit kan zowel het gevolg zijn van het ouder worden, alsook van een veranderde lichaamsbouw in de opeenvolgende generaties.

Gewicht. Hoe ouder de groep hoe lager het gemiddelde gewicht was. Bij vrouwen lag het gemiddelde gewicht in elke leeftijdsgroep significant lager dan bij mannen. De standaardafwijking was bijna steeds ruim 10 kg. Het gemiddelde gewicht zonder kleren daalde bij mannen van 70,6 kg in de jongste groep tot 65,6 kg in de oudste groep en bij vrouwen van 68,8 kg tot 59,8 kg.

Lengte. Parallel met de gewichtsvermindering in de opeenvolgende leeftijdsgroepen bleek er ook een duidelijke vermindering van de gemiddelde lengte te zijn. Bij mannen was deze van 168,9 cm tot 165,6 cm en bij vrouwen van 158,0 cm tot 153,8 cm (bij een standaardafwijking, die steeds ongeveer 7 cm was). De vrouwen waren bijna steeds ruim 11 cm korter dan de mannen. Bij de eerstgenoemden was geen samenhang aantoonbaar tussen het gewicht en de lengte in cm minus honderd.

Zithoogte. Deze daalde eveneens in bijna elke opeenvolgende leeftijdsgroep, nl. bij mannen van 86,3 tot 83,4 cm en bij vrouwen van 80,9 tot 76,3 cm (standaardafwijking 6-7 cm).

Borstomtrek bij expiratie. Ook ten aanzien van deze maat was sprake van een duidelijk teruglopen van de gemiddelde waarden in de opeenvolgende leeftijdsgroepen, nl. bij mannen van 93,6 cm in de jongste groep tot 90,6 cm in de oudste groep en bij vrouwen van 91,4 cm tot 85,8 cm (standaardafwijking 7-10 cm). De expiratoire borstomtrek was bij de eersten vanzelfsprekend ook weer groter dan bij de laatsten.

Ademexcursie. Ook de ademexcursie, gemeten als verschil tussen de inspiratoire en de expiratoire borstomtrek, blijkt naarmate van een oudere groep bejaarden sprake is, kleiner te zijn. Bij mannen van 65-69 jaar was het gemiddelde verschil 4,8 cm, maar bij mannen van 85 jaar en ouder was dit nog slechts 3,9 cm. Voor vrouwen waren deze aantallen resp. 4,1 en 3,5. De standaardafwijking was bij mannen 1,6-1,9 cm, bij vrouwen 1,4-1,8 cm. De laatsten vertoonden dus een kleinere ademexcursie dan de eersten.

Polsfrequentie. In tegenstelling met de tot dusverre genoemde resultaten, had de leeftijd geen significante invloed op de polsfrequentie. De gemiddelde polsfrequentie voor 1599 mannen was 75 slagen per minuut, met een standaardafwijking van 12, en voor 1544 vrouwen 81, met eveneens een standaardafwijking van 12.

Systolische bloeddruk. De gemiddelde systolische bloeddruk van de onderzochte mannen was in de opeenvolgende leeftijdsgroepen (met uitzon-

dering van de oudste) steeds iets hoger, er was nl. een toename van 161 mm Hg tot 168 (164 bij mannen van 85 jaar en ouder) bij een standaardafwijking van 25-28 mm Hg. Dit verschijnsel deed zich echter niet bij de onderzochte vrouwen voor. Bij deze groep schommelde de gemiddelde systolische bloeddruk tussen 177 en 184 mm Hg en de standaardafwijking was 27-33 mm Hg. De vrouwen hadden steeds een aanmerkelijk hogere gemiddelde systolische bloeddruk dan de mannen. Bij beide geslachten lag deze gemiddelde bloeddruk steeds boven de 160 en bij vrouwen zelfs boven de 175 mm Hg. Een duidelijk verhoogde systolische bloeddruk, nl. van 200 mm Hg of meer had in de opeenvolgende leeftijdsgroepen bij mannen 7%, 6%, 13%, 12% en 10% en bij vrouwen 23%, 23%, 21%, 23% en 25%. Ongeveer 1/4 van de onderzochte bejaarde vrouwen had dus een duidelijke systolische hypertensie.

Bij mannen in goede lichamelijke toestand, bij wie het onderzoek geen afwijkingen aan hart en grote vaten aantoonde, was de gemiddelde systolische bloeddruk in de opeenvolgende leeftijdsgroepen resp. 155, 157, 161, 163 en 154 mm Hg; voor vrouwen waren de overeenkomstige waarden resp. 169, 173, 170, 175 en 179 mm Hg.

Diastolische bloeddruk. Zowel bij mannen als bij vrouwen (bij de laatsten met uitzondering van de leeftijdsgroepen 70-74 jaar en 85 jaar en ouder) lag de gemiddelde diastolische bloeddruk steeds lager dan 100 mm Hg. Bij mannen was de gemiddelde diastolische bloeddruk ongeveer 94 mm (met een standaardafwijking van ongeveer 16 mm Hg), bij vrouwen lag deze tussen 96 en 101 mm Hg (met een standaardafwijking van ongeveer 18 mm Hg). Vrouwen hadden dus ook een hogere gemiddelde diastolische bloeddruk dan mannen. Bij beide geslachten is van een leeftijdsinvloed niet veel te bespeuren, hoogstens bestaat er bij vrouwen een aanwijzing, dat in de oudere groepen (van 75-84 jaar) de gemiddelde diastolische bloeddruk wat lager is dan in de jongere groepen (van 65-74 jaar).

Bij mannen zonder duidelijke hart- en vaatafwijkingen was de diastolische druk in de leeftijdsgroepen achtereenvolgens 89, 90, 89, 87 en 85, bij vrouwen in dezelfde omstandigheden 94, 95, 91, 92 en 96 mm Hg.

Nederlandse bejaarden weken, wat hun bloeddruk betreft, niet of weinig af van hun tijdgenoten in een aantal andere westerse landen.

Ademhalingsfrequentie. De gemiddelde ademhalingsfrequentie per minuut bleek in de opeenvolgende leeftijdsgroepen steeds wat groter te zijn. Van de groep mannen van 65-69 jaar had het kwart deel met de laagste frequenties een frequentie van gemiddeld 15,7 of minder ademhalingen per minuut, maar van de groep mannen van 75 jaar en ouder had het

overeenkomstige deel een gemiddelde frequentie van 17,7 ademhalingen per minuut. Voor vrouwen waren de betreffende aantallen 16,1 en 17,9, deze lagen dus nog iets hoger dan bij de mannen. Over het algemeen kan men de ademhalingsfrequenties bij bejaarden zeker niet laag noemen.

Hemoglobinegehalte. Het Hb-gehalte van het bloed lag bij bejaarde vrouwen lager dan bij bejaarde mannen; de leeftijd had, althans na het 65ste jaar, weinig invloed op dit gehalte.

Van de mannen had een hemoglobinegehalte van achtereenvolgens 8 gr%, 9 gr% enz. tot 17 gr% of hoger resp. 0,5%, 0,8%, 2%, 5%, 11%, 19%, 22%, 21%, 13% en 5%. Voor vrouwen waren deze percentages resp. 1, 1, 3, 9, 18, 24, 21, 15, 6 en 2.

De resultaten van 6 Rotterdamse huisartsen, die de Hb-bepalingen in het Centraal Laboratorium van die stad hadden laten verrichten, werden vergeleken met die van de overige huisartsen en wel ten aanzien van het aantal bejaarden, dat een Hb-gehalte van 12 gr% of lager had en het aantal bejaarden waarvan het Hb-gehalte 13 gr% of hoger was. De verschillen tussen de gevonden en de verwachte aantallen waren vrij gering, zodat hieruit mag worden afgeleid, dat als totaal de Hb-bepalingen door de grote groep huisartsen, die deze zelf hadden gedaan of bij hen thuis hadden laten doen, niet bijzonder afweken van die welke in één laboratorium waren verricht.

Bezinkingssnelheid. Een bezinkingssnelheid, hoger dan 15 mm na het eerste uur, had resp. 14, 12, 21, 27 en 33% van de mannen in de opeenvolgende leeftijdsgroepen en resp. 27, 32, 30, 37 en 33% van de vrouwen. Hieruit blijkt dus wel, dat een vrij hoog percentage van de onderzochte bejaarden een verhoogde bezinkingssnelheid van de rode bloedlichaampjes had. Het is de vraag, of dit verschijnsel bij bejaarden altijd een pathologische betekenis heeft.

RESULTATEN VAN HET EIGENLIJKE LICHAMELIJKE ONDERZOEK

De algemene lichamelijke indruk. In de jongste groep mannen maakte 18% een minder goede (matige of slechte) lichamelijke indruk, in de oudste groep niet minder dan 42%. Voor vrouwen waren deze percentages 25 en 49. In elke leeftijdsgroep was het percentage van mannen, waarvan de lichamelijke toestand als goed werd beschouwd groter dan dat van vrouwen. Tussen 70 en 85 jaar waren de verschillen zelfs significant. Ten aanzien van dit sexeverschil kwam de indruk van de artsen dus overeen met het oordeel van de betrokkenen zelf. Overigens bestond er echter

in het algemeen wél een divergentie tussen hetgeen de bejaarde zelf van zijn gezondheidstoestand vond en de indruk, die de arts van zijn lichamelijke toestand kreeg. De leeftijd speelde hierbij vanzelfsprekend een belangrijke rol. Viel het oordeel van de onderzochten in de jongere groepen, in het bijzonder bij vrouwen van 65-74 jaar, wat ongunstiger uit dan dat van de artsen, in de volgende leeftijdsgroepen was juist het omgekeerde het geval. Verder was opvallend, dat de percentages van hen, van wie de lichamelijke toestand als slecht werd gekenmerkt (mannen 0,7-5%, vrouwen 0,9-9%) zo laag waren.

Orthopedische afwijkingen [43]. Afwijkingen aan romp, ledematen of gewrichten kwamen bij 46-61% der onderzochte mannen en 51-68% van de onderzochte vrouwen voor en wel bij stijgende leeftijd in toenemende mate (met als uitzondering de oudste groep vrouwen). Geringe rompafwijkingen (welke dus echter bij gelijktijdige aanwezigheid van verscheidene afwijkingen als „voornaamste" waren aangeduid) kwamen daarentegen bij 24-33% van de onderzochte mannen en 18-26% van de onderzochte vrouwen voor. Deze afwijkingen werden vooral bij de ouderen aangetroffen. Ernstige orthopedische afwijkingen had 6-9% der mannen en 8-18% van de vrouwen. Van 45 mannen met een ernstige rompafwijking werd gemeld, dat 25 een ernstige kyphose en 20 een ernstige kyphoscoliose hadden. Voor vrouwen waren de corresponderende aantallen resp. 82, 30 en 44. Ernstige afwijkingen aan de ledematen (vnl. voetafwijkingen) werden bij 36 mannen en 46 vrouwen vastgesteld. Aan *ernstige* arthrosis deformans zouden 29 mannen en 62 vrouwen hebben geleden.

Afwijkingen van de huid, de lymfeklieren, de schildklier en de mammae. Zowel van de mannen als van de vrouwen vertoonde 26-38% één of meer der bovengenoemde afwijkingen. Bij mannen steeg het aantal afwijkingen enigszins met de leeftijd, bij vrouwen bestond er geen duidelijke leeftijdsinvloed. Geringe huidafwijkingen vormden de groep van de meest voorkomende (als „voornaamste" aangegeven) afwijkingen. Bij 23-31% der mannen en 19-26% der vrouwen kwamen zij voor, iets met de leeftijd in frequentie toenemend.

Ernstige huidafwijkingen werden bij 15 mannen (w.o. 3 met decubitus) en 29 vrouwen (waarvan 9 een ulcus crusis hadden) aangetroffen. Van 7 vrouwen werd vermeld, dat zij een ernstige schildklieraandoening

[43] Wanneer hier en bij volgende punten over afwijkingen wordt gesproken, dan wordt bedoeld, dat bij gelijktijdige aanwezigheid van enige of verscheidene afwijkingen, de genoemde door de onderzoekers als de "voornaamste", de "nog het meest in het oog springende" afwijkingen waren aangegeven

hadden of daarvoor waren geopereerd. Van alle onderzochte vrouwen had 2% mammacarcinoom of had daaraan geleden, bij zeker 3 van de 4 had daarvoor mamma-amputatie plaatsgevonden.

Peesreflexen. De kniepees- en de achillespeesreflexen werden afwijkend bevonden bij 16-29% van de mannen en 10-31% van de vrouwen. In elke volgende leeftijdsgroep lag het betreffende percentage hoger. De Achillespeesreflex vertoonde gemiddeld 2-4 × zoveel afwijkingen als de kniepeesreflex.

Pupilreacties, evenwichtszin, tremoren. Van de mannen had 16-38% en van de vrouwen 12-35% afwijkingen met betrekking tot een of beide functies of last van tremoren. Van de oudste groepen vertoonden significant meer personen een of meer afwijkingen dan van de jongere. De meest voorkomende (als „voornaamste" aangegeven) afwijkingen betroffen de niet-ernstige tremoren, welke bij 7-17% der onderzochten voorkwamen, in elke leeftijdsgroep meer bij mannen dan bij vrouwen en meer op oudere dan op jongere leeftijd. Ongeveer één op de zes mannen van 80 jaar en ouder en één op de zes vrouwen van 85 jaar en ouder had last van niet-ernstige tremoren.

Ernstige tremoren kwamen voor bij 27 mannen en 22 vrouwen, ernstige afwijkingen van de pupilreacties bij 14 mannen en 26 vrouwen en ernstige evenwichtsafwijkingen bij 6 mannen en 8 vrouwen.

Mond-, neus- en keelafwijkingen. Van alle onderzochten vertoonde 10-18% afwijkingen van de lippen, wangen, tong, smaak, reuk, neus, stem of spraak. Het percentage van hen, die klachten hadden steeg iets, doch niet significant, met de leeftijd. Er bestond geen verschil van belang tussen de beide geslachten, wat betreft de frequenties van de afzonderlijke afwijkingen. Als voornaamste afwijkingen werden vooral genoemd reukafwijkingen (nl. bij 69 mannen en 62 vrouwen) en afwijkingen aan de tong (nl. bij 51 mannen en 44 vrouwen). Lipafwijkingen hadden 25 mannen en 29 vrouwen en spraakafwijkingen 31 mannen en 19 vrouwen.

Een in redelijke toestand verkerend eigen *gebit* hadden slechts 65 mannen (met een van 7 tot 2 dalend percentage) en 27 vrouwen (3-0%). Over een matig eigen gebit beschikte met stijgende leeftijd 8 tot 2% der mannen en 3 tot 0% der vrouwen. De oudere leeftijdsgroepen hadden in aanzienlijke en steeds stijgende mate een eigen, maar in slechte staat verkerend gebit. Significant meer vrouwen dan mannen hadden een kunstgebit. Slechts weinig meer mannen dan vrouwen hadden sinds 1-5 jaar een prothese, doch het aantal vrouwen, dat al meer dan 15 jaar in het

bezit daarvan was, was meer dan tweemaal zo groot als het betreffende aantal mannen.

Oogafwijkingen. Bij het onderzoek bleek, dat visusmoeilijkheden bij ten minste 79-91% van de mannen en 81-96% van de vrouwen tot het gebruik van een bril aanleiding hadden gegeven. Vrouwen maakten meer gebruik van een bril dan mannen, bij stijgende leeftijd was het aantal brillendragers naar verhouding kleiner; bij mannen steeg het percentage van hen, die geen bril hadden van 9 tot 21, bij vrouwen van 4 tot 19. Verreweg het grootste deel van de brillen werd gebruikt wegens „hypermetropie", hetgeen meestal: presbyopie betekende. Ruim 2/3 van alle onderzochten had daarvoor al meer dan 5 jaar een bril en vond daarbij baat. Negentig mannen en 117 vrouwen in totaal klaagden dat zij voor hun „verziendheid" geen baat bij hun bril vonden.

Bij verder onderzoek bleken 36 mannen en 46 vrouwen blind of bijna blind te zijn, d.i. resp. ± 2% der mannen en 3% der vrouwen. In de oudste leeftijdsgroep waren deze percentages resp. 6 en 9. Cataract kwam in aanzienlijke mate voor, significant meer bij vrouwen dan bij mannen, en iets met de leeftijd in frequentie toenemend (mannen: 5-18% van alle onderzochten, vrouwen: 8-21% van alle onderzochten).

Gehoorafwijkingen. Het percentage mannen met een gehoorafwijking was in de opeenvolgende leeftijdsgroepen 18, 26, 28, 37 en 41; voor vrouwen waren deze getallen 15, 14, 28, 33 en 46. Over het algemeen hadden mannen dus iets meer afwijkingen dan vrouwen. Het aantal personen met gehoorafwijkingen bleek aanmerkelijk met de leeftijd toe te nemen.

Ongeveer 90% (bij mannen afdalend van 95 tot 84%, bij vrouwen van 97 tot 76%) van alle onderzochten meende echter geen gehoortoestel nodig te hebben. Slechts ± 2% van de mannen en ± 3% van de vrouwen gebruikte wel zo'n apparaat. Voor ± 4% van de mannen en ± 2½% van de vrouwen zouden de kosten een belemmering vormen voor de aanschaf.

Toestand vaatstelsel

Polskwaliteiten. Het aantal personen met een onregelmatige en/of inaequale pols nam bij stijgende leeftijd toe: bij mannen van 10 tot 25%, bij vrouwen van 12 tot 30%. Het verschil tussen de uiterste leeftijdsgroepen was duidelijk significant, tussen de beide sexen was het echter onbetekenend. Een volkomen onregelmatige, inaequale pols had bijna 4% van de mannen en ruim 3% van de vrouwen.

Veranderingen aan de perifere bloedvaten. Het percentage van hen die vaatveranderingen vertoonden, was in de opeenvolgende leeftijdsgroepen steeds groter: de oudste groepen (mannen 82%, vrouwen 80%) hadden significant meer „afwijkingen" dan de jongste (mannen 59%, vrouwen 47%). Tot het 80ste jaar bleken steeds significant meer mannen dan vrouwen deze afwijkingen te hebben. Veranderingen aan de a. radialis werden het meest waargenomen, nl. bij 46% van alle onderzochte mannen en 41% van alle onderzochte vrouwen. Waar bij beide sexen echter het percentage van hen, bij wie de wand van de a. radialis alleen palpabel en verder niet pathologisch veranderd was, in alle leeftijdsgroepen ongeveer constant bleef, nl. ± 25%, werd een geslingerde of duidelijk verharde radialis bij stijgende leeftijd steeds meer gevoeld. A. brachialisveranderingen kwamen bij 16% der mannen en 10% der vrouwen voor.

Oedemen, varices. Mannen vertoonden een stijging in de frequentie van deze afwijkingen, alleen of in combinatie, van 25 tot 33%, bij vrouwen viel een daling van 53 tot 43% te constateren. Tussen de beide sexen bestond een significant verschil met betrekking tot het voorkomen van oedemen en/of varices. Varices kwamen in bijna elke leeftijdsgroep, dikwijls in significante mate, meer voor dan oedemen.

Hartafwijkingen. Bij percussie van hart en grote bloedvaten bleken in de oudste groepen significant meer bejaarden afwijkingen te vertonen dan in de jongste. Vrouwen hadden ze significant meer dan mannen. Een dubieuze of matige vergroting van de hartfiguur was de afwijking, die in dat geval het meest was gevonden. De betreffende percentages stijgen van 18 tot 34 bij mannen en van 27 tot 42 bij vrouwen. Een sterke vergroting werd slechts bij 40 mannen en 57 vrouwen vastgesteld.

Auscultatorische afwijkingen kwamen 6-10% minder voor dan afwijkingen bij percussie. Er werd voornamelijk een zachte systolische souffle gevonden, nl. bij 8-18% van de mannen en 15-21% van de vrouwen. Zowel de zachte als de duidelijke systolische souffle kwamen meer bij de vrouwen dan bij de mannen voor. Bij slechts ± 2% van alle onderzochten werden diastolische souffles beluisterd.

Borstkas en longen. Van de mannen had 62-74%, van de vrouwen 60-81% een symmetrische, normaal gewelfde borstkas. Als afwijking kwam het meest een afgeplatte borstkas voor en wel meer bij vrouwen dan mannen (alleen in de groep van 75-79 jaar was het verschil echter significant).

Kortademigheid van enigerlei aard werd (tot 80 jaar significant) meer bij vrouwen dan bij mannen en bij de oudste mannen tweemaal en bij de

oudste vrouwen 1½ maal zoveel waargenomen als bij de jongste mannen resp. de jongste vrouwen. Kortademigheid bij lichte inspanning ging bij stijgende leeftijd en wel vooral bij vrouwen een steeds belangrijkere rol spelen. In rust was reeds ongeveer 4% van de bejaarden kortademig.

Bij percussie en auscultatie werden naarmate de bejaarden ouder waren meer afwijkingen gevonden: bij mannen steeg het betreffende percentage van 15 tot 30, bij vrouwen van 11 tot 22. Percussie leverde slechts in weinig gevallen afwijkingen op. Bij auscultatie werd echter een vrij groot en met de leeftijd duidelijk toenemend aantal afwijkingen vastgesteld: bij mannen in de opeenvolgende leeftijdsgroepen bij resp. 9, 10, 17, 14 en 23%, bij vrouwen resp. 8, 8, 11, 18 en 19%. Zowel bij percussie als bij auscultatie werden bij ± 6% van de mannen en 3% van de vrouwen afwijkingen gevonden.

Buik- en geslachtsorganen. Bij ongeveer 2/5 van de onderzochte bejaarden en wel iets meer bij mannen (35-47%) dan bij vrouwen (35-43%), vonden de artsen afwijkingen van de *buikwand.* Bij mannen speelden de breuken een grote rol: zij werden in de opeenvolgende leeftijdsgroepen bij 13-26% der onderzochten gevonden en slechts bij 3-7% der vrouwen. Deze laatsten vertoonden daarentegen duidelijk meer een diastase van de mm. recti (percentages van 12-18) dan de mannen (percentages van 1 tot 4).

Afwijkingen van de *buikinhoud* werden in veel geringere mate dan de zojuist genoemde afwijkingen waargenomen. Vrouwen overwogen met een (met de leeftijd geleidelijk stijgend) percentage van 15-23. Voor mannen waren deze percentages 9-16. In verreweg de meeste gevallen bestonden deze afwijkingen uit een vergrote lever, nl. bij 7-11% der mannen en 11-17% der vrouwen.

Bij ongeveer 1/7 (11-17%) van de onderzochte mannen werden afwijkingen van de *genitaliën* vastgesteld. Een leeftijdsinvloed viel noch hierbij noch bij de afzonderlijk genoemde afwijkingen te bespeuren. Ontbreken van een testis of cryptorchismus werd slechts bij 23 mannen geconstateerd.

Afwijkingen van de *anus* kwamen bij 1/5 (17-23%) van de onderzochte mannen en 1/5 (19-21%) van de onderzochte vrouwen voor. (Bij 22 mannen en 93 vrouwen werd geen onderzoek op dit punt verricht.) Enige leeftijdsinvloed was niet aantoonbaar. Ongeveer 3/4 van alle afwijkingen bestond bij beide geslachten uit hemorrhoïden. Bij een groot deel van de mannen en met stijgende leeftijd in snel toenemende mate werd een vergrote prostaat gevonden, nl. bij bijna 1/3 tot 1/2 van de onderzochten. Een onvoldoende sphincter-aanspanning kon ook nogal eens worden

vastgesteld, vooral bij vrouwen en wel naar verhouding het meest bij de oudste groepen (bij 13-14% van de vrouwen boven 80 jaar).

De meest voorkomende afwijking aan de *vrouwelijke geslachtsorganen* bleek prolaps van de vaginaalwand te zijn, bij 12-17% van de 1222 onderzochte vrouwen was deze aanwezig. Daarnaast kwam vooral bij de oudste groep nogal eens kraurosis voor en verder stress-incontinence al of niet vergezeld van een vaginaal-prolaps, nl. bij 4-11% van alle onderzochten.

Bij het onderzoek van de *inwendige vrouwelijke genitaliën* bij 909 vrouwen werd bij 8-13% der onderzochten een afwijking gevonden. Bij 22 vrouwen namen de onderzoekers een goedaardige erosie waar; 5 vrouwen hadden een verdachte erosie en 4 een carcinoom (d.i. $\pm$ ½% van alle onderzochte vrouwen).

Ledematen.

Armen, handen. Bij stijgende leeftijd nam het percentage personen met afwijkingen aan de *armen* en/of *handen* duidelijk toe, namelijk bij mannen van 24 tot 42% en bij vrouwen van 25 tot 39%. De laatsten hadden steeds, met uitzondering van de alleroudsten, iets meer afwijkingen dan de eersten. Over het algemeen kwamen tremoren naar verhouding het meeste voor; vooral bij de oudste groepen en in het bijzonder bij de mannen werden zij aangetroffen. Daarnaast werden vooral bij vrouwen nog vrij veel gevallen van rheumatoïde arthritis, arthrosis deformans en stijfheid waargenomen, namelijk bij resp. 31, 66 en 77 mannen en resp. 98 (ruim 6%), 110 (7%) en 88 (bijna 6%) vrouwen. Slechts 7 mannen en 5 vrouwen hadden paralyses.

Afwijkingen aan de *benen* en/of *voeten* kwamen meer voor dan die aan de armen en/of handen. Bij vrouwen was dit verschil zelfs in elke leeftijdsgroep, op de oudste na, significant. Evenals bij de vorige groep afwijkingen werden ook hier bij hogere leeftijd meer afwijkingen gevonden en hadden vrouwen in bijna elke leeftijdsgroep deze significant meer dan mannen. Hier speelde echter arthrosis deformans de grootste rol, ongeveer 1 op de 10 mannen (8-15%) en 1 op de 5 vrouwen (19-24%) vertoonde hiervan verschijnselen. Paralyses werden bij 6 mannen en 7 vrouwen aangetroffen.

Urine. Van bijna alle bejaarden, namelijk 1562 mannen en 1510 vrouwen, werd de urine onderzocht. Bij totaal 196 mannen (13%) en 250 vrouwen (17%) vonden de onderzoekers eiwit in de urine; suiker daarentegen „slechts" bij 64 mannen (4%) en 84 vrouwen (6%). Twee of meer

afwijkingen tegelijk werden bij 57 mannen en 64 vrouwen vastgesteld.

Van bijna alle urines, waarin eiwit werd aangetoond, vond onderzoek van het sediment plaats. In een belangrijk deel der gevallen werden dan slechts enkele leukocyten gevonden, nl. bij 25-40% van de 189 op sediment onderzochte urines van mannen en bij 33-49% van de 243 daarop onderzochte urines van vrouwen. Veel leukocyten vond men bij 13-35% der betreffende sedimenten bij mannen en bij 15-33% der sedimenten bij vrouwen. Erytrocyten werden bij 40 mannen en 36 vrouwen gevonden.

Thans gevonden, tevoren onbekende afwijkingen. Vrijwel constant werden in elke leeftijdsgroep bij 1/3 van de mannen (32-34%) en bij iets minder dan 1/3 van de vrouwen (23-31%) door de onderzoeker afwijkingen gevonden, die hem tot voor dit onderzoek onbekend waren. Het grootste deel van die afwijkingen was van niet ernstige aard, bij 27-29% van alle onderzochte mannen en 16-25% van alle onderzochte vrouwen was dit het geval. Bij 75 mannen (3-7% in de verschillende leeftijdsgroepen) en 95 vrouwen (5-8% in de diverse leeftijdsgroepen) echter vonden de artsen afwijkingen, die zij wel ernstig achtten.

Aard der tevoren onbekende afwijkingen. In de eerste plaats (nl. in ± 24% der ontdekte afwijkingen) werd een verhoogde tensie bij dit onderzoek vastgesteld. Op de tweede plaats (17% der ontdekte afwijkingen) kwamen de afwijkingen, gevonden bij het urine-onderzoek. De derde plaats van de eerder niet ontdekte afwijkingen werd ingenomen door de afwijkingen, gevonden bij rectaal onderzoek (11%). In 85 van de 90 gevallen werden deze afwijkingen bij mannen geconstateerd; dit zullen dus wel meestal prostaatvergrotingen zijn geweest. Een verhoogde bloedbezinking was in 8,4% de belangrijkste der gevonden, tevoren onontdekte, afwijkingen. Voorts werden o.m. nog bij 61 personen hartafwijkingen, bij 50 anemie en bij 22 tumoren vastgesteld.

Ook bij de ernstige, tevoren onbekende, afwijkingen stond hypertensie op de eerste plaats, gevolgd door hartafwijkingen, rectaalafwijkingen (bij mannen) of urine-afwijkingen (bij vrouwen) en urine-afwijkingen (bij mannen) of tumoren (bij vrouwen).

SOCIAAL-PSYCHOLOGISCHE GEGEVENS

Tijdsbesteding

Lezen. In het geheel geen krant lezen deden slechts weinig bejaarden, behalve in de groep vrouwen van 80 jaar en ouder, waarvan 1/4 nooit

een krant las. Meer mannen dan vrouwen en meer jongere dan oudere bejaarden hielden zich met krantenlectuur bezig.

Ongeveer 2/5 van alle mannen en 1/4-1/3 van alle vrouwen, die dagelijks in de krant keken, lazen daarin alles; slechts bij de oudste groepen gebeurde dit wat minder dan bij de jongere groepen. In de oudere leeftijdsgroepen van de geregelde lezers bleken meer bejaarden vooral de gemengde berichten te lezen dan in de jongere groepen.

Tijdschriften bleken veel minder dan kranten door de bejaarden te worden gelezen. Het aantal personen, dat geregeld, althans eenmaal per maand, een tijdschrift las, nam met toenemende leeftijd duidelijk af: bij mannen van 53 tot 31%, bij vrouwen van 57 tot 36%. Vrouwen lazen over het algemeen meer dan mannen een tijdschrift.

Een bij beide geslachten met stijgende leeftijd dalend percentage personen (mannen 31-18%, vrouwen 30-19%) las ten minste één boek per maand, 47-71% van de mannen en 49-67% van de vrouwen las nooit een boek. Zij, die geregeld boeken lazen, namen in de eerste plaats een roman ter hand; vooral vrouwen deden dit. Met het toenemen der leeftijd bleken romans echter minder vaak tot de meest gelezen soorten boeken te gaan behoren, maar boeken met wijsgerige of religieuze inslag steeds meer te worden gelezen.

Naar de radio luisteren. Een zeer grote meerderheid der bejaarden bleek over de mogelijkheid te beschikken om naar de radio te luisteren. Iets meer mannen dan vrouwen verkeerden in die positie. Met stijgende leeftijd namen bij beide geslachten de betreffende percentages duidelijk af: bij mannen van 94 tot 76, bij vrouwen van 95 tot 72. De percentages van hen, die gemiddeld minder dan één uur luisterden, veranderden echter weinig met de leeftijd: 39-47% van de mannen en 33-44% van de vrouwen behoorden tot deze groep luisteraars.

Bijna de helft (46-51%) van de mannelijke luisteraars was in de eerste plaats geïnteresseerd in de nieuwsberichten, de vrouwen beschouwden vooral de kerkdiensten en godsdienstige uitzendingen als het belangrijkste programma. Bij de laatsten was van een duidelijke leeftijdsinvloed sprake: het betreffende percentage verdubbelde van 24 in de jongste tot 47 in de oudste groep. Eenzelfde verschijnsel was overigens ook bij de mannen waar te nemen (van 7 tot 20%).

Bezoek aan bioscoop- of andere voorstellingen. Met toenemende leeftijd daalde het percentage van mannen, die althans meer dan éénmaal per jaar naar de bioscoop gingen van 25 tot 2; voor vrouwen waren deze getallen resp. 19 en 3. Het stijgen der leeftijd deed ook het aantal bezoekers aan

schouwburg, concert of andere voorstelling absoluut en relatief sterk dalen; de betreffende percentages daalden bij mannen van 35 tot 7, bij vrouwen van 26 tot 5. Mannen gingen steeds meer uit dan vrouwen.

Zondagsbesteding vroeger en thans. Op de vraag, hoe men *vroeger* de zondag doorbracht en of men zich op zo'n dag verveelde, antwoordde slechts 1 vrouw bevestigend op dit laatste. Een groot deel van de onderzochten was op die dag ter kerke gegaan nl. 34-44% van de mannen en 43-58% van de vrouwen (de laatsten in de meeste leeftijdsgroepen dus significant meer dan de eersten). Een kleine 10% van alle onderzochten bleek vroeger 's zondags „niets te hebben gedaan" (of te hebben geslapen), echter blijkbaar zonder zich te vervelen. *Ten tijde* van het onderzoek ging een nog aanzienlijk, maar op hoge leeftijd sterk dalend percentage bejaarden 's zondags naar de kerk (mannen 28-21%, vrouwen 38-12%). Een steeds toenemend aantal bejaarden zei op die dag rustig thuis te zitten (21-49% van de mannen, 23-53% van de vrouwen).

Vakantiebesteding vroeger. Op de vraag, hoe men vroeger de vakantie doorbracht, werd door een aanzienlijk deel der bejaarden, nl. 18%, geen antwoord gegeven. Het behoeft geen verbazing te wekken (al zijn de getallen wel veelzeggend), dat door meer dan de helft van hen die wel antwoordden werd gezegd, dat er nooit sprake van vakantie was geweest. Het betreffende percentage steeg in de opeenvolgende leeftijdsgroepen van 43 tot 65 (85 jaar en ouder: 58%). Van hen die wel vakantie hadden gehad, hadden slechts zeer enkelen zich dan verveeld.

Verveling. In de opeenvolgende leeftijdsgroepen zeiden steeds meer bejaarden zich af en toe of vaak te vervelen. Bij mannen stegen de betreffende percentages van 14 tot 25 resp. van 3 tot 8, bij vrouwen van 15 tot 28 en van 3 tot 10. Vrouwen gaven dus iets meer dan mannen aan zich te vervelen. Ongeveer 1 op de 4-6 bejaarden zei zich af en toe te vervelen.

„Vrije" tijdsbesteding. Een met de leeftijd steeds toenemend aantal bejaarden vulde de tijd met wat praten, uit het raam kijken, naar de radio luisteren e.d. Bij mannen steeg het betreffende percentage van 9 tot 36, bij vrouwen van 7 tot 34. Het merendeel gaf op in zijn vrije tijd allerlei kleine werkjes op te knappen (dit begrip is zeer ruim genomen); bij mannen daalde het betreffende percentage bij stijgende leeftijd van 51 tot 28; bij vrouwen schommelde het tussen 51 en 65. Hulpverlening aan kinderen of anderen werd echter slechts zelden genoemd.

Doel en aard van bepaalde liefhebberijen. Het grootste deel der bejaarden bleek er geen bepaalde liefhebberijen op na te houden. Het betreffende

percentage steeg met de leeftijd duidelijk; bij mannen van 44 tot 69 en bij vrouwen van 48 tot 67. Iets meer mannen dan vrouwen hadden wél een of andere liefhebberij. In het algemeen beschouwde men deze als een „plezierige tijdspassering", aanzienlijk meer dan de helft van hen, die een liefhebberij hadden, vond dat het belangrijkste doel daarvan.

De door 766 mannen meest genoemde liefhebberijen waren tuinieren (24-35%), knutselen, repareren, timmeren enz. (12-20%) en dieren houden en verzorgen (13-15%; boven de 85 jaar echter 26%). Slechts ± 8% van deze mannen beschouwde het kaarten als voornaamste liefhebberij.

Bij 667 vrouwen waren breien, haken en handwerken de meest genoemde liefhebberijen (60-69%), de leeftijd scheen nauwelijks enige invloed op deze activiteit te hebben. Hierna volgden: tuinieren (4-11%), lezen (3-15%) enz. Kaarten werd door ± 5% van de vrouwen graag gedaan.

Van de mannen bleek 48-59% en van de vrouwen 78-86% zich nooit met knutselen bezig te hebben gehouden. Aan knutselen hadden dus veel meer mannen dan vrouwen gedaan. Ten tijde van het onderzoek knutselde een met de leeftijd sterk dalend percentage mannen (30-9%); vrouwen knutselden steeds weinig (3-6%).

Fietsen, bromfietsen. Bijna alle mannen hadden wel eens gefietst (zij het in de jongere groepen wat meer dan in de oudere: 1% (van de leeftijdsgroep 65-69 jaar) resp. 7% (van de leeftijdsgroep 85 jaar en ouder) had nooit gefietst, een aanzienlijk deel der vrouwen vooral in de oudere groepen had dit echter nooit gedaan (12-34%). Het percentage van hen die nog wel fietsten verminderde natuurlijk snel bij stijgende leeftijd: bij mannen van 62 tot 7, bij vrouwen van 25 tot 0,4. In de groep van 85 jaar en ouder zou 2% nog steeds fietsen.

Geen van de onderzochte vrouwen scheen zich nog aan het berijden van een bromfiets te wagen. Van de mannen van 65 t/m 69 jaar gebruikte nog 11% een bromfiets; dit percentage daalde echter in de opeenvolgende leeftijdsgroepen snel: 6, 2, 0,7 en 0!

Werkzaamheden. Van de mannen van 65 t/m 69 jaar zei 31% nog meer dan 3 uur per dag betaalde arbeid te verrichten en 11% deed nog enige betaalde arbeid. Van de vrouwen in die leeftijdsgroep was 80% nog volop in het huishouden bezig. De percentages van nog werkzame bejaarden zakten vanzelfsprekend snel in de opeenvolgende leeftijdsgroepen: bij de mannen van 64 tot 30, bij de vrouwen van 93 tot 36. Het percentage personen, dat zei in het geheel niet meer te werken, nam daarentegen in de opeenvolgende leeftijdsgroepen vanzelfsprekend aanzienlijk toe: bij

mannen van 36 tot 70, bij vrouwen van 7 tot 64. Van de werkzame mannen van 65-69 jaar werkte nog 64% om economische redenen. In de volgende leeftijdsgroepen zijn de betreffende percentages 50, 32, 22 en 20.

Contact met familie en kennissen. Onder de bejaarden bleken slechts weinigen (36 mannen en 23 vrouwen) nooit of vrijwel nooit (d.m.v. bezoeken) in contact te staan met hun familieleden en/of kennissen. In de opeenvolgende leeftijdsgroepen waren er steeds minder bejaarden die geregeld een bezoek brachten en ontvingen (mannen 34-16%, vrouwen 46-10%).

Van de mannen gaf 76-87% en van de vrouwen 71-81% aan niet teruggetrokken te zijn en zich niet eenzaam te voelen. Bij stijgende leeftijd nam het percentage van hen, die dat wèl waren, echter wèl en min of meer volgens de verwachting toe, nl. bij mannen van 13 tot 24 en bij vrouwen van 19 tot 29. Van eenzaamheidsgevoelens was sprake bij 6-12% van de mannen en 14-20% van de vrouwen.

Aanpassing

Verhouding met echtgeno(o)t(e). De grote meerderheid der nog gehuwde bejaarden was van mening, dat deze verhouding de laatste jaren hetzelfde was gebleven. Een klein gedeelte (5-10% der mannen en 4-10% der vrouwen) en dan voornamelijk van de ouderen, vond de verhouding slechter worden, maar een relatief veel groter gedeelte, voornamelijk van de jongeren, meende dat deze juist verbeterd was (mannen: 10-16%, vrouwen: 14-19%).

Overlijden van echtgeno(o)t(e). Van 520 mannen zei 74% zich goed, 19% matig en 7% slecht te hebben aangepast aan het alleen achterblijven na het overlijden van hun echtgenote. Voor 773 vrouwen waren deze percentages resp. 81, 13 en 6.

Inwoning van (of bij) kinderen. Een belangrijk deel (meer dan 1/3) van alle onderzochte bejaarden woonde met één of meer kinderen samen. Van de bejaarden, die kinderen hadden, leefde minder dan de helft daarmee samen. Het inwonen van of bij de kinderen werd meestal door de bejaarden prettig gevonden. Tussen mannen en vrouwen bestond ten aanzien van dit punt weinig verschil.

Uit huis trekken der kinderen. Een belangrijk deel der bejaarden had het niet prettig gevonden, toen de kinderen het huis verlieten. Ruim de helft van de mannen (48-63%) en meer dan 1/3 van de vrouwen (31-45%) had het normaal en juist geacht, dat de kinderen het ouderlijk huis hadden

verlaten. Weliswaar normaal, maar verder toch „akelig" had 21-35% der mannen en 33-42% der vrouwen het wegtrekken gevonden. Een klein gedeelte der mannen, nl. 5-8% en een tamelijk groot deel van de vrouwen nl. 14-21% had het verschrikkelijk gevonden dat de kinderen waren weggetrokken; daarentegen had 4-6% van de mannen en de vrouwen dit prettig gevonden.

Huidige huisvesting. In de opeenvolgende leeftijdsgroepen hadden steeds meer bejaarden (bij mannen van 7 tot 44%, bij vrouwen van 8 tot 47% stijgend) bij anderen huisvesting gevonden. Dit onderdak hadden zij voornamelijk en in ongeveer gelijke mate bij hun kinderen en bij vreemden gevonden. Toch zei nog 56% van de mannen van 85 jaar en ouder en 53% van de vrouwen van die leeftijd in het eigen huis te wonen.

Contact met kinderen en kleinkinderen (inclusief stief- en pleegkinderen). Geen of slecht contact had 1-4% van de mannen en 0,3-3% van de vrouwen. Het contact werd als matig bestempeld bij 6-13% der mannen en 5 tot 11% der vrouwen. Bij de oudere groepen was wat meer sprake van een slecht of matig contact dan bij de jongere. Bij 72-77% van alle mannen en 60-77% van alle vrouwen zou het contact goed zijn.

Subjectief gezondheidsgevoel. Ten aanzien van deze tweemaal gestelde vraag bleek dat een vrij groot aantal bejaarden de tweede keer een ander antwoord gaf dan de eerste maal. Ten dele was men gunstiger over zijn gezondheidstoestand gaan denken, ten dele waren de gevoelens juist minder positief geworden. Een met de leeftijd dalend aantal bejaarden meende, dat hun gezondheid de laatste tijd niet achteruit gegaan was (mannen 81-61%; vrouwen 74-55%). Van hen, die hun gezondheid verminderd achtten, stond verreweg het grootste deel hier aanvaardend tegenover. In elke leeftijdsgroep van mannen deed ongeveer 4%, van vrouwen 6% dat niet. „Een rustige, geregelde levenswijze" noemde 17-31% van de mannen en 15-27% van de vrouwen als belangrijkste reden voor een nog goede of redelijk goede gezondheid. „Hard werken, een werkzaam leven" werd door 10% van de mannen van 65-69 jaar geopperd, in de oudere leeftijdsgroepen was dit percentage echter veel lager. Artsenhulp of geneesmiddelen werden over het algemeen weinig als oorzaak opgegeven (bij mannen 0,4-3%, bij vrouwen 3-7%). „Ouderdom, slijtage" werd door 27-55% van de mannen en 21-62% van de vrouwen als oorzaak voor een slechte gezondheid opgegeven. De hoogste van de hier genoemde percentages hadden vanzelfsprekend betrekking op de oudste groepen.

Houding ten aanzien van het ophouden met werken. Van de 1561 mannen, die op de betreffende vraag antwoordden, zei 34-54% (met de leeftijd stijgend) dat zij ten tijde waarop zij het werk hadden moeten neerleggen, om welke reden dan ook, eigenlijk liever waren blijven doorwerken. Een gedeelte van de mannen, met een percentage dat van 32 in de groep 65-69 jaar daalde tot 6 in de groep van 85 jaar en ouder, gaf aan nog werkelijk een aantal bezigheden van belang te verrichten. In elk der leeftijdsgroepen had ruim 1/4 (27-28%) van de mannen het prettig gevonden te kunnen ophouden met werken. Slechts weinig vrouwen (6-16%) hadden het staken van hun huishoudelijke werkzaamheden prettig gevonden, vrij velen hadden deze willen voortzetten (4-34%).

Godsdienstige steun bij moeilijkheden. Een aanzienlijk aantal bejaarden, waarvan het percentage overigens slechts weinig met de leeftijd toenam, meende in geval van moeilijkheden geestelijke steun te vinden in hun godsdienstige opvattingen (mannen 41-48%, vrouwen 59-69%). Van de mannen zei 47-53% geen dergelijke steun te behoeven; van de vrouwen daarentegen slechts 24-34%.

Ouderdomsgevoelens

Subjectieve lichamelijke ouderdomsverschijnselen. Bij de mannen deelde 22%, bij de vrouwen 21% mede geen bepaalde verschijnselen van oud worden te hebben opgemerkt; in de opeenvolgende leeftijdsgroepen daalden deze percentages steeds verder tot resp. 11% en 9% in de oudste groep. Een van de belangrijkste naar voren gebrachte verschijnselen was het eerder moe worden (mannen 16-25%, vrouwen 17-32%); naar verhouding klaagden de jongeren hierover meer dan de ouderen, bij wie andere ouderdomsverschijnselen een relatief grotere rol gingen spelen. Minder goed lopen werd ook nogal eens, vooral door de ouderen en wat meer door vrouwen dan door mannen, als teken van ouder worden opgevat;bij de eersten liep het percentage op van 5 tot 18 en bij de laatsten van 10 tot 22. Tempovermindering en geheugenzwakte werden daarentegen slechts vrij weinig genoemd (beide 2-5%).

Ruim 1/4 van de mannen (25-32%) en ruim 1/3 van de vrouwen (31-40%) had het onaangenaam gevonden deze veranderingen te bespeuren. Voor de meerderheid der bejaarden scheen althans volgens hun zeggen het ouder worden geen probleem te hebben gevormd (bij de mannen in 46-61%, bij de vrouwen in 46-56% der gevallen); bij de ouderen was dit meer het geval dan bij de jongeren. Slechts zeer weinigen

(± 4% van alle onderzochten) deden of hadden wat gedaan tegen deze ouderdomsverschijnselen.

Nog in leven zijnde kennissen. In de opeenvolgende leeftijdsgroepen van mannen zei 37, 54, 75, 89 en 89% en van vrouwen 29, 58, 76, 87 en 91% alleen te zijn overgebleven.

Vestiging van de aandacht op de ouderdom. De grote meerderheid van de onderzochte bejaarden had er geen bezwaar tegen, dat anderen de aandacht op hun ouderdom vestigden door b.v. voor hen in tram of bus op te staan, of stond daar onverschillig tegenover. Bij 1500 mannen daalde met stijgende leeftijd het percentage van hen, die dit wel onplezierig vonden van 20 op 5, bij 1529 vrouwen van 15 op 7 (12% in de groep van 85 jaar en ouder).

Besef van de plaats van de bejaarde

Houding ten aanzien van hulpverlening door anderen. Verreweg de meeste bejaarden zeiden, dat men hen nog alles liet doen zoals zij dat gewend waren geweest, al daalde vanzelfsprekend hun aantal met toenemende leeftijd duidelijk: bij mannen van 88 tot 53, bij vrouwen van 85 tot 40. Slechts zeer weinigen (43 mannen en 48 vrouwen) en dan vooral onder de oudsten, meenden dat hun ten onrechte veel of alles uit handen was genomen. De overigen, met de leeftijd snel in aantal toenemend, vonden dat wel terecht (mannen 11-41%, vrouwen 13-51%).

Waarde van het bestaan voor de gemeenschap. Het percentage van hen die zeiden dat hun bestaan geen waarde had, steeg bij 1306 mannen achtereenvolgens van 15 tot 30 en bij 1273 vrouwen van 9 tot 23, de overeenkomstige percentages van hen die hun bestaan maar van weinig waarde achtten waren resp. 10-15 en 7-9. Van de mannen zei 9-11% en van de vrouwen 18-28% dat zij hun kinderen nog konden helpen. Van de bejaarden, die op de betreffende vraag antwoord gaven, ontleende een met toenemende leeftijd kleiner wordend deel zijn bestaanswaarde aan het dienen van anderen (mannen 33-19%, vrouwen 43-25%). Een niet onaanzienlijk deel van de jongere mannen achtte de eigen werkzaamheden nog waardevol (65 t/m 69 jaar: 17%). Vrij velen wisten geen antwoord te geven (mannen 14-26%, vrouwen 14-25%).

Verenigingslidmaatschappen. Bij mannen steeg het percentage van hen die nooit lid van een vereniging waren geweest in de opeenvolgende groepen van 19 tot 36 en bij vrouwen van 51 tot 70. Een met de leeftijd dalend

percentage (bij mannen van 28 tot 15, bij vrouwen van 24 tot 11) was nog wel lid, maar had nooit een bestuursfunctie gehad. Van de mannen van 65 t/m 69 jaar bekleedde echter nog 13% een bestuursfunctie; in de daaropvolgende groepen zakte dit percentage van 8 tot 2.

Bijna 1/3 van 453 mannen (de percentages, in de afzonderlijke leeftijdsgroepen, lagen tussen 20 en 41) en bijna 1/6 van 272 vrouwen (10-27%) was lid van een bejaardenvereniging of -sociëteit. Van kerkelijke verenigingen waren meer bejaarden uit de oudere dan uit de jongere groepen lid en meer vrouwen dan mannen. Van de vrouwen van 65-69 jaar was niet minder dan 59% lid van een of andere vrouwenvereniging, dit percentage liep echter snel terug tot 7 in de groep van 85 jaar en ouder.

Terugblik op het leven. Meer dan de helft van de bejaarden die antwoordden op de betreffende vraag (nl. 51-60%) zei tevreden te zijn wanneer ze op het leven terugzagen. Een vijfde deel (16-24%) achtte het zelfs geslaagd, maar 10-20% van 1465 mannen en 12-16% van 1384 vrouwen zou het leven, hoewel niet ontevreden daarover, op andere wijze hebben willen overdoen!

Oordeel over tegenwoordige samenleving. In elke leeftijdsgroep van de 1550 mannen die antwoord gaven, meenden ongeveer evenveel personen (44-45%), dat de huidige samenleving beter was dan vroeger. Bijna evenveel waren echter van mening, dat deze nu juist slechter was dan vroeger (36-43%). De rest van de mannen dacht dat er geen verschil van belang viel te bespeuren. De 1435 vrouwen, die op de vraag antwoordden, verschilden in hun oordeel niet veel van de mannen, de betreffende percentages waren resp.: 34-46, 32-45 en 18-23.

Oordeel over tegenwoordige jeugd. Ook in hun oordeel over de tegenwoordige jeugd stemden de beide sexen vrijwel overeen en in de meeste gevallen was dat oordeel niet erg gunstig. Over het algemeen stonden de bejaarden in de jongere groepen nog het mildste tegenover de jeugd: b.v. van 1336 mannen, waarvan een of ander antwoord werd verkregen, vond van de groep van 65-69 jaar 21% resp. 11% de jeugd gelijk aan resp. beter dan vroeger, maar van de groep van 85 jaar en ouder slechts 11% resp. 6%. Een kwart van alle ondervraagden vond de jeugd te brutaal, ondeugend en baldadig en ruim een kwart meende dat zij in het algemeen slechter was dan vroeger.

De geheugenproef. De eerste drie vragen, betreffende hun *naam*, *leeftijd* en *geboortedatum*, werden door zeer vele bejaarden vanzelfsprekend goed beantwoord, hoewel in de oudere leeftijdsgroepen vooral vrij veel vrou-

wen (± 26%) toch één of meer antwoorden schuldig bleven. Boven de 80 jaar was het verschil tussen mannen en vrouwen significant.

Aanzienlijk grotere aantallen bejaarden dan de zojuist genoemde konden één of meer vragen op het gebied van *algemene oriëntatie* niet beantwoorden: bij mannen steeg het betreffende percentage van 19 in de jongste groep tot 54 in de oudste groep en bij vrouwen van 22 tot 58. Ten aanzien hiervan bestond er geen opmerkelijk sexeverschil.

De beantwoording van de vragen met betrekking tot de *oriëntering* naar *tijd* leverde daarentegen weer betere resultaten op. Bij mannen steeg met de leeftijd het percentage van hen, die één of meer vragen niet konden beantwoorden van 5 tot 24, bij vrouwen van 11 tot 40. De vrouwen van 80 jaar en ouder hadden in het bijzonder moeite met deze vragen.

De oriëntatie naar *plaats* leverde relatief heel weinig moeilijkheden op. Bij de mannen steeg in de opeenvolgende leeftijdsgroepen het percentage van hen, die één of meer vragen niet goed konden beantwoorden, van 0,3 tot 11 (in de groep van 80-84 jaar was het echter slechts 5), bij de vrouwen van 1 tot 22 (in de groep van 80-84 jaar was het 14 en in de groep van 75-79 slechts 5). Ook hierbij bleven de oudste vrouwen naar verhouding het meest in gebreke.

Het *alfabet* werd in de op elkaar volgende leeftijdsgroepen door steeds minder bejaarden goed opgezegd, en wel achtereenvolgens door 79, 72, 72, 63 en 63% van de mannen en 82, 74, 70, 56 en 61% van de vrouwen.

De opgave, om *met 3 tegelijk vanaf 1 op te tellen*, werd achtereenvolgens door 68, 67, 61, 54 en 47% van de mannen en 58, 56, 49, 39 en 36% van de vrouwen geheel tot een goed einde gebracht. Er hadden dus meer vrouwen dan mannen moeite met deze vraag.

Moeilijkheden met het *rekensommetje met geldbedragen* had in de opeenvolgende leeftijdsgroepen 4, 5, 10, 16 en 25% van de mannen en 7, 12, 15, 28 en 37% van de vrouwen. Ook hier bleven dus, evenals bij de meeste andere opgaven uit de geheugenproef meer vrouwen dan mannen in gebreke. Een aanzienlijk deel van de oudsten bleek voorts moeite te hebben met deze dagelijkse handeling.

Bij de *auditieve geheugenproef* (navertellen van een verhaaltje) behaalde 21-33% van de mannen en 25-34% van de vrouwen 2 van de 6 punten. 4 of meer punten behaalde slechts 17 (65-69 jaar) – 2% (85 jaar en ouder) der mannen en 14 (70-74 jaar) – 4% (85 jaar en ouder) der vrouwen. De gemiddelden van de bij dit onderdeel behaalde aantallen punten lagen bij mannen tussen 2,5 punt in de jongste en 1,8 punt in de oudste groep, voor vrouwen waren deze gemiddelden 2,4 en 1,4.

Bij het *natekenen* werden betere resultaten geboekt dan bij het navertellen. Een groot aantal bejaarden, dat echter met stijgende leeftijd terugliep en dat bij vrouwen aanzienlijk kleiner was dan bij mannen, kon 4 punten (het maximum) behalen (in de opeenvolgende leeftijdsgroepen: mannen 49-19%, vrouwen 32-10%). Toch was het aantal personen, dat geen enkel punt kon behalen, ook aanzienlijk, vooral in de oudere groepen (bij mannen steeg het betreffende percentage van 8 tot 35, bij vrouwen van 17 tot 49!). De gemiddelden van de behaalde aantallen punten lagen tussen 2,9 en 1,7 bij mannen en 2,4 en 1,1 bij vrouwen.

De eerste 15 vragen werden door het merendeel der bejaarden alle goed beantwoord. Geen of slechts één fout maakten in de opeenvolgende groepen 72, 68, 61, 46 en 39% van de mannen en 70, 60, 58, 33 en 34% van de vrouwen.

Uitkomsten van de gehele geheugenproef. Het percentage van hen, die 19 of meer punten (van het maximum 26) wisten te behalen, minderde snel met stijgende leeftijd, nl. van 76 tot 32 bij mannen en van 69 tot 26 bij vrouwen. Gelijk op grond van de uitkomsten der afzonderlijke onderdelen der proef kon worden verwacht, waren er dus duidelijk minder vrouwen dan mannen, die goede resultaten wisten te behalen. Ook was heel duidelijk, dat hoe ouder de groep was, hoe minder personen dit konden doen. Dit kwam o.m. ook tot uiting in het verloop der gemiddelden van de totaal behaalde aantallen punten. Deze waren nl. bij mannen achtereenvolgens 20,3, 19,8, 18,7, 17,3 en 16,0; bij vrouwen 19,6, 18,9, 17,9, 15,5 en 14,1. Steeds bleek ook, dat uit de groepen boven de 80 jaar ineens veel minder bejaarden tot een behoorlijk resultaat wisten te komen dan in de voorafgaande groepen.

GECOMBINEERDE GEGEVENS

Volstaan wordt met het vermelden van de voornaamste conclusies, zoals die aan de hand van de beschikbare gegevens konden worden getrokken. Bij de verschillende berekeningen moest worden volstaan met de gegevens over twee leeftijdsgroepen te verdelen: 65-74 jaar en 75 jaar en ouder.

Subjectieve gezondheidsgevoelens en oordeel van de arts over de lichamelijke toestand in samenhang met een reeks factoren en omstandigheden. Aangezien de mening van de onderzochte over zijn gezondheid en het oordeel van de arts daarover nogal eens van elkaar verschilden, was het nodig beide factoren steeds afzonderlijk te beoordelen.

Beroep. Er was geen duidelijke samenhang tussen het (belangrijkste) vroeger of thans nog beoefende beroep en de objectieve gezondheidstoestand. Evenmin was dit het geval ten aanzien van de subjectieve gezondheidstoestand van de onderzochte bejaarden.

Welvaartsklasse. De uitkomsten lieten zien dat in elke groep volgens leeftijd en geslacht verhoudingsgewijs meer personen van de laagste welvaartsklasse (inkomen ongeveer gelijk aan de uitkering volgens de Noodwet Ouderdomsvoorziening) een objectief matige dan een objectief goede gezondheidstoestand hadden en dat het omgekeerde gold voor hen die tot de hoogste welvaartsklasse (inkomen meer dan *f* 3.000,— per jaar) behoorden. Alleen in de groep mannen van 65 t/m 74 jaar waren de verschillen echter significant (indruk van de onderzoeker met betrekking tot de lichamelijke toestand van de onderzochte: in de laagste welvaartsklasse: goed 15%, matig 27%; in de hoogste welvaartsklasse: goed 35%, matig 20%). Vrijwel dezelfde verhouding als tussen welvaartsklasse en de objectieve gezondheid bestond tussen welvaartsklasse en subjectieve gezondheidsgevoelens.

Burgerlijke staat. De gehuwde staat ging volgens de gegevens enigermate gepaard met een objectief betere lichamelijke toestand. Van een samenhang met de subjectieve gezondheidsgevoelens bleek vrijwel niets, de verschillen in de leeftijdsgroepen waren telkens van tegengestelde aard.

Karakter van de woonplaats. Ten „plattelande" bevonden zich in de groep van hen over wier lichamelijke toestand de arts een gunstig oordeel had, relatief meer personen dan in de groepen van hen, bij wie dit oordeel matig of slecht was; het tegenovergestelde was het geval bij bewoners van verstedelijkte plattelandsgebieden en grote steden. Het plattelandsleven zou dus misschien de gezondheidstoestand iets gunstiger hebben beïnvloed dan het leven in of nabij kleinere en grotere steden.

Bij de combinatie met het subjectieve gezondheidsgevoel was dit verschijnsel nog iets duidelijker te zien. Op het platteland voelden zich dus wat meer oude mensen gezond dan in de stedelijke gebieden. Het plattelandsleven zou dus misschien het subjectieve welzijn nog iets meer dan de objectieve gezondheid bevorderen.

Laatste geneeskundige behandeling. Gelijk kon worden verwacht, bestond er een duidelijk verschil tussen de percentages van bejaarden, die in de drie maanden voorafgaande aan het onderzoek nog onder doktersbehandeling waren geweest, in de groepen met een objectief goede gezondheid en in die met een objectief matige en slechte gezondheid. Van de mannen,

waarvan de arts de lichamelijke indruk maar matig vond, was 63% in de laatste drie maanden onder geneeskundige behandeling geweest, voor vrouwen was dit percentage 71. Voor het (kleine) aantal mannen met een objectief slechte gezondheid, lag het betreffende percentage tussen 77 en 91 en voor de overeenkomstige groep vrouwen tussen 91 en 100. Daarentegen bleken nog vrij velen met een matige gezondheid (nl. 74 mannen en 72 vrouwen) reeds langer dan een jaar geen medische hulp te hebben ingeroepen.

Nog sterker was de samenhang van een matige of slechte subjectieve gezondheidstoestand en het recent inroepen van medische hulp. Dit blijkt uit een nog groter verschil tussen de percentages van personen, die de laatste 3 maanden onder behandeling waren in de groepen van resp. hen, die zich goed gezond gevoelden en hen, die dat niet deden. Drie van de vier mannen of vrouwen met een matig subjectief gezondheidsgevoel waren nog tijdens de laatste 3 maanden voor het onderzoek bij de dokter geweest. Voor mannen, die hun gezondheidstoestand slecht achtten, waren de percentages 82-91 en voor vrouwen 82-98.

Alcoholgebruik. Van een samenhang tussen het al of niet consumeren van alcohol gedurende een groot deel van het leven en de objectieve lichamelijke toestand bleek weinig. Hoogstens bestond er een zekere aanwijzing bij mannen van 75 jaar en ouder, dat degenen van hen, die geen alcohol hadden gebruikt naar verhouding iets meer een gezonde indruk maakten dan degenen, die gewoon waren geweest een tamelijk grote hoeveelheid drank tot zich te nemen. Ten aanzien van de combinatie van subjectieve gezondheidsgevoelens met het gebruik van alcoholische dranken viel slechts hetzelfde te concluderen.

Tabaksgebruik. Een samenhang van vroegere of huidige rookgewoonten met de objectieve of subjectieve gezondheid kon aan de hand van de gegevens uit het onderzoek niet worden aangetoond.

Alcohol- en tabaksgebruik. Mede gezien het voorafgaande werd geen duidelijke samenhang van het gecombineerde gebruik van beide genotmiddelen met de objectieve of subjectieve gezondheidstoestand van de onderzochte mannen gevonden. Uiteraard dient men bij het beschouwen van bovenstaande gegevens, en ook in andere gevallen, waar sprake is van mogelijk schadelijke invloeden of van de aanwezigheid van bepaalde aandoeningen, steeds ermee rekening te houden, dat de meest geïntoxiceerden of de ernstigste zieken reeds uitgevallen zijn.

Verblijf in de tropen. Uit de bevindingen viel niet af te leiden, dat de gezondheid van hen, die in de tropen hadden verbleven, wezenlijk verschilde van de gezondheid van hen, die daar niet waren geweest.

Toestand gebit. Bij vergelijking van de objectieve gezondheidstoestand bij personen:
1e met een goed of matig goed eigen gebit;
2e met een slecht eigen gebit (of zonder enig eigen of kunstgebit) en
3e met een prothese,
bleek, dat de percentages van personen uit de eerste en laatste categorie in de groep van hen, wier lichamelijke toestand goed werd geacht, steeds hoger waren dan in de groep van hen, waarvan de lichamelijke indruk als matig werd aangegeven. Het tegenovergestelde was juist het geval bij de categorie van hen die een slecht gebit of in het geheel geen gebit hadden. In sommige gevallen verschilden de betreffende percentages zelfs significant van elkaar, zodat de voorzichtige conclusie kan zijn, dat een objectief matige gezondheidstoestand en een in slechte toestand verkerend gebit of de afwezigheid van tanden en kiezen zonder vervanging door een prothese in het algemeen met elkaar samengaan, hetgeen overigens een welbekend feit is.

Het hierboven beschreven verschijnsel van het enigszins samengaan van een matige algemene toestand met een in slechte staat verkerend gebit was veel minder duidelijk bij de combinatie van het subjectieve gezondheidsgevoel met de toestand van het gebit.

Hoge bloeddruk. Als criterium voor een (te?) hoge bloeddruk werd genomen de combinatie van een diastolische bloeddruk van 100 mm Hg of hoger en een systolische bloeddruk van 160 mm Hg of hoger. Het percentage van hen, die volgens deze maatstaf een hoge tensie hadden, bleek in de groep van bejaarden met een niet zo goede gezondheidstoestand hoger te liggen dan in de groep van hen, wier lichamelijke toestand wel goed werd bevonden. De twee percentages verschilden echter geen enkele maal significant van elkaar. Een hoge bloeddruk en een minder goede objectieve gezondheidstoestand hingen dus slechts ten dele met elkaar samen.

Bij beschouwing van de combinatie van hoge bloeddruk met subjectief welzijn kon men niet meer van enige samenhang spreken.

Gevoelens van verveling. Steeds was (met uitzondering van de groep mannen van 75 jaar en ouder) het percentage van hen, die zich soms of geregeld verveelden, in de categorie van bejaarden met een objectief

matige gezondheidstoestand aanmerkelijk hoger dan in de categorie van personen, waarvan de lichamelijke toestand een gunstige indruk op de onderzoeker maakte.

De percentages van personen met een slechte gezondheid die zich verveelden lagen vrijwel steeds nog hoger, zij versterkten daardoor de reeds getrokken conclusie, dat een minder goede gezondheid samenging met gevoelens van verveling.

Op vrijwel dezelfde wijze bleek het zich subjectief minder gezond voelen samen te gaan met een zich meer vervelen.

Liefhebberijen. Min of meer parallel met de aanwezigheid van gevoelens van verveling gaat vaak de afwezigheid van liefhebberijen. Bij voorbaat was dus te verwachten, dat de percentages van hen, die er geen liefhebberijen op na hielden, in de groep van bejaarden, waarvan de lichamelijke toestand door de onderzoeker als matig werd bestempeld hoger zouden liggen dan in de groep van objectief gezonde bejaarden. Inderdaad was dit het geval, al waren de verschillen tussen de twee percentages meestal niet significant.

De uitkomsten van de combinaties van het subjectieve welzijn met al of niet aanwezige liefhebberijen verschillen niet noemenswaard van de zojuist genoemde.

Werkzaamheden. Het relatieve aantal van hen, die in het geheel niets meer deden, was in de categorie van de objectief gezonden steeds veel kleiner dan in de categorie van de objectief matig gezonden en nog veel kleiner dan in de (kleine) groep van hen, van wie de lichamelijke toestand een slechte indruk gemaakt had. De dalingen in de percentages van de categorie goed gezonden naar de categorie matig gezonden waren overigens in de groepen van mannen, die slechts enkele dagen per week en die elke dag nog werkzaamheden hebben, relatief ongeveer even groot, zodat de objectieve gezondheidstoestand dus blijkbaar niet samenhing met de mindere of meerdere mate van activiteit. Waarschijnlijk moet de interpretatie dus weer zo zijn, dat zij, die goed gezond waren meer gelegenheid hadden om nog werkzaam te zijn dan zij, van wie de gezondheid te wensen overliet.

De combinatie van de subjectieve gezondheidsgevoelens met het al of niet meer werkzaam zijn, gaf vrijwel hetzelfde beeld.

Teruggetrokkenheid, eenzaamheid. Uit de gegevens bleek duidelijk, dat steeds het percentage van hen, die noch teruggetrokken waren, noch zich eenzaam gevoelden in de categorie van objectief gezonde bejaarden aan-

merkelijk hoger was dan in de categorie van objectief minder gezonde bejaarden.

Combinatie van subjectieve gezondheidsgevoelens met het al of niet aanwezig zijn van eenzaamheid en teruggetrokkenheid leverde geen in belangrijke mate verschillende gezichtspunten op.

Contact met kinderen, eventueel kleinkinderen. In elk der vier groepen waren de percentages van hen, die ruzie met hun nageslacht hadden, of daarmede geen, weinig of matig contact onderhielden, in de categorie van hen, van wie de gezondheidstoestand een gunstige indruk op de arts maakte steeds iets, zij het nooit significant, lager dan in de categorie van hen, wier gezondheidstoestand niet zo gunstig werd beoordeeld. Misschien zou dit op een zekere samenhang kunnen wijzen van de mate van contact met de gezondheidstoestand, al is deze eventuele samenhang weer voor tweeërlei uitleg vatbaar.

De percentages waren over het algemeen nog wat groter, wanneer het om de combinatie van het subjective welzijn met de mate van contact ging.

Pensionering. Het percentage van hen, die zeiden nog door te werken, was in de groep van de objectief goed gezonde bejaarden steeds aanmerkelijk hoger dan in de groep van objectief matig gezonden. Ook bij de mannen die het prettig hadden gevonden gepensioneerd te worden, was het eerstgenoemde percentage, zij het slechts onbetekenend, hoger dan het laatstgenoemde. Merkwaardig was vooral, dat de percentages van hen, die eigenlijk liever hadden willen doorwerken, in de groep van matig gezonde bejaarden vrijwel steeds aanzienlijk hoger waren dan in de groep van goed gezonde personen. Men zou op grond van deze bevinding – en wel voornamelijk bij de groep van 65-69-jarige mannen – kunnen veronderstellen, dat een vrij groot aantal van hen tegen hun zin was gepensioneerd, wellicht ten gevolge van een matige gezondheid. Evenzeer zou men echter kunnen veronderstellen, dat pensionering, tegen de wens van de betrokkene in, had geleid tot een minder goede gezondheid.

De uitkomsten van de combinatie van subjectieve gezondheidsgevoelens met de waardering van de pensionering verschilden niet wezenlijk van de zojuist vermelde.

Levensbeoordeling. Ter gemakkelijker vergelijking werden met betrekking tot dit punt twee groepen gevormd, nl. van hen, die terugblikkend op hun leven, hierover tevreden waren of het geslaagd vonden en van hen, die erover ontevreden waren of het mislukt achtten. De uitkomsten lieten

zien dat in laatstgenoemde groep het percentage van hen, waarvan de arts de lichamelijke toestand matig vond, steeds hoger (bij vrouwen van 65-74 jaar zelfs in significante mate) was dan dat van hen, die in een goede gezondheidstoestand verkeerden. Hetzelfde en in nog iets sterkere mate gold ten aanzien van hen, die zich subjectief goed resp. matig gezond voelden.

Resultaten geheugentest. Verscheidene berekeningen toonden aan, dat een goede objectieve of subjectieve gezondheid dikwijls samenging met het behalen van een behoorlijk aantal punten in de geheugentest. Zo was b.v. het gemiddelde aantal punten, behaald door hen, die deze proef geheel hadden gedaan, in de groepen van de bejaarden, van wie de arts de lichamelijke toestand resp. als goed, matig of slecht had gekenmerkt, bij mannen resp. 19,4, 17,5 en 13,2 en bij vrouwen resp. 18,5, 17,1 en 13,3. De verschillen tussen de opeenvolgende waarden waren significant.

ANDERE COMBINATIES VAN BEPAALDE GEGEVENS

Objectieve gezondheid en tijdstip van onderzoek

Het veelvuldiger onderzoek in de zomer bleek over het algemeen niet geleid te hebben tot een duidelijk groter aantal gunstige beoordelingen door de artsen van de gezondheidstoestand der onderzochte bejaarden in dat jaargetijde.

Welvaartsklasse, burgerlijke staat, aard van de woonplaats en ziekenfondslidmaatschap waren onder meer factoren, die in verband met bepaalde omstandigheden op het gebied van de gezondheid nader werden bezien.

Welvaartsklasse

Laatste geneeskundige behandeling. Met uitzondering van de groep mannen van 75 jaar en ouder liet elke geslachts- en leeftijdsgroep zien, dat de klasse met de meeste „welvaart" (met een inkomen van meer dan *f* 3.000,— per jaar) slechts iets minder dan de twee andere inkomenscategorieën binnen de laatste drie maanden onder doktersbehandeling was geweest. Welvaartsklasse en periode, waarin men voor het laatst onder doktersbehandeling was geweest waren over het algemeen twee omstandigheden, die weinig of niet met elkaar samenhingen.

Hinderlijke klachten, waarvoor de arts niet werd geraadpleegd. Er viel een lichte tendens waar te nemen, dat hoe hoger de welvaartsklasse was, hoe minder

de hulp van een arts werd ingeroepen ondanks de aanwezigheid van hinderlijke klachten. De verschillen tussen de diverse percentages waren overigens steeds slechts zeer gering.

Ziekenhuisopname na het 65ste jaar. Het beeld was niet erg duidelijk, met uitzondering van het feit, dat in de jongere groep mannen de minst draagkrachtigen naar verhouding het meest in een ziekenhuis opgenomen waren geweest. Bij vergelijking van de drie welstandsgroepen, zonder daarbij rekening te houden met de leeftijden, bleek echter dat er van bejaarden uit de laagste welstandsgroep significant meer opnamen na het 65ste jaar hadden plaatsgevonden dan van bejaarden uit de hoogste welstandsgroep.

Anemie. Een lagere welstand scheen bij de bejaarden samen te gaan met een iets grotere kans op anemie.

Diastolische bloeddruk. Uit de resultaten kon worden geconcludeerd, dat diastolische hypertensie ($\geqslant$ 100 mm Hg) in ongeveer even grote mate bij alle drie welstandsgroepen voorkwam, al was het betreffende percentage voor alle bejaarden in de laagste klasse (39) wat hoger dan dat voor alle bejaarden in de middelste (36) en in de hoogste klasse (34).

Eenzaamheid, teruggetrokkenheid. De uitkomsten lieten zien, dat hoe hoger de welstand was, hoe minder er van eenzaamheid, teruggetrokkenheid of beide sprake was.

Resultaten geheugentest. In de hoogste welvaartsklasse hadden over het algemeen veel meer personen 19 of meer punten, minder personen 16, 17 of 18 punten en veel minder personen 15 of minder punten behaald in de geheugenproef dan in de twee andere welvaartsklassen. De middelste categorie behaalde op haar beurt betere resultaten dan de laagste categorie.

Burgerlijke staat

Hierbij werden de groepen van hen, die nooit gehuwd waren, die nog gehuwd waren en die gehuwd waren geweest, onderling vergeleken.

Geregelde raadpleging van de arts. Een bepaalde samenhang tussen de burgerlijke staat en het geregeld raadplegen van de arts kon niet worden aangetoond.

Ziekenhuisopname na het 65ste jaar. Over het algemeen genomen bleken de gehuwden (28%) naar verhouding minder dan de ongehuwden (33%) en

dan de niet meer gehuwden (38%) opgenomen te zijn geweest; het verschil tussen de eersten en laatsten was significant.

Diastolische bloeddruk. Bij de mannen, als geheel genomen, bleken de ongehuwden het minst een verhoogde diastolische tensie te hebben (24%), vervolgens de gehuwden (29%) en het meest hadden de niet meer gehuwden deze bloeddrukverhoging: 33%. Bij vrouwen waren de overeenkomstige percentages 38, 43,(3) en 42,(6), zodat bij hen dus de groep gehuwden iets – doch zeer weinig – meer een bloeddrukverhoging vertoonde dan de twee andere groepen.

Teruggetrokkenheid, eenzaamheid. Zoals te verwachten viel, waren de gehuwden duidelijk minder teruggetrokken of eenzaam dan de twee andere categorieën.

Verveling. Uit de getallen bleek, dat de burgerlijke staat weinig samenhing met het zich al of niet vervelen.

Aard der woonplaats

Ten aanzien van enkele punten werd nagegaan, of het wonen op het „platteland", in verstedelijkte plattelandsgebieden of in de stad verschil uitmaakte. Bij de beoordeling van deze gegevens dient men zich voor ogen te houden, dat het feit, dat de bejaarde ten tijde van het onderzoek in één der genoemde gebieden woonde, geenszins wil zeggen, dat hij dat altijd had gedaan.

Geregelde raadpleging van de arts. Op het platteland werd de arts duidelijk minder geregeld geraadpleegd dan in de twee andere soorten van gebieden, die onderling niet veel verschil vertoonden ten aanzien van dit punt.

Ziekenhuisopname na het 65ste jaar. Van in het verstedelijkt plattelandsgebied wonende bejaarden waren er naar verhouding meer na hun 65ste jaar in een ziekenhuis opgenomen geweest dan van de in de stad wonende bejaarden en duidelijk meer dan van de op het platteland wonende ouden van dagen.

Diastolische bloeddruk. Op grond van de beschikbare gegevens kon niet worden gezegd, dat de bewoners van een der drie gebieden naar verhouding duidelijk meer aan diastolische hypertensie zouden lijden dan de bejaarden uit één der twee andere soorten van gebieden.

Eenzaamheid, teruggetrokkenheid. Er was een tendens te bespeuren, dat de bejaarden op het platteland het minst eenzaam of teruggetrokken waren.

Drie categorieën werden onderscheiden:
1e. bejaarden, die nooit ziekenfondslid waren, 2e. zij, die dat korter dan de laatste 5 jaren voor het onderzoek waren en 3e. zij, die reeds vijf jaren of langer lid van een ziekenfonds waren.

Laatste geneeskundige behandeling. Een duidelijke samenhang van een eventueel ziekenfondslidmaatschap met het tijdstip van de laatste medische hulpverlening was volgens de beschikbare gegevens niet aantoonbaar. Er was niet meer dan een aanduiding, dat de bejaarden, die nooit ziekenfondslid waren geweest meer dan zij, die dit wél waren, behoorden tot de categorie die de arts minstens een jaar niet had geraadpleegd.

Geneesmiddelengebruik. Het niet gebruiken van geneesmiddelen bleek waarschijnlijk niet in verband te staan met een ziekenfondslidmaatschap. Wel was er een aanwijzing, dat de niet-ziekenfondsleden naar verhoudng wat meer geneesmiddelen alleen volgens eigen inzicht gebruikten dan zij, die wel ziekenfondslid waren.

Subjectieve gezondheidstoestand. Onder ziekenfondsleden waren niet duidelijk meer personen dan onder niet-ziekenfondsleden te vinden, die hun gezondheid goed, of matig of slecht achtten.

Objectieve gezondheidstoestand. Uit de combinatie van een eventueel ziekenfondslidmaatschap en de lichamelijke toestand van de onderzochten volgens de huisarts viel geen duidelijke samenhang tussen de twee gegevens af te leiden.

Niet eerder ontdekte afwijkingen. Bij hen, die reeds 5 jaar of langer ziekenfondslid waren, werden iets meer afwijkingen aangetroffen (33%) dan bij hen, die nooit lid waren geweest (27%) of dan bij hen, die korter dan 5 jaar lid waren (25%).

VERDERE COMBINATIES

Afwijkingen tijdens zwangerschap, bevalling of kraambed

Bloeddruk. Van een duidelijk samengaan van een afwijking tijdens zwangerschap, bevalling of kraambed met een verhoogde bloeddruk op oudere leeftijd, althans ten tijde van het onderhavige onderzoek, kon niet worden gesproken.

Hartauscultatie. Er was geen sprake van een samengaan van vroegere gestatiestoornissen met de bij dit onderzoek vastgestelde auscultatoire afwijkingen aan het hart.

Vulva, vagina. Er was evenmin sprake van een duidelijk samengaan van bij het onderzoek aangetroffen afwijkingen van vulva en/of vagina met de betreffende stoornissen.

Inwendige genitaliën. Er werden iets meer afwijkingen aan de inwendige genitaliën gevonden bij vrouwen, die wel zwangerschaps- en daarmede samenhangende stoornissen hadden gehad dan bij vrouwen, die deze niet hadden gehad.

Objectieve gezondheid. Van meer vrouwen, die geen zwangerschaps- en daarmede samenhangende stoornissen hadden gehad, werd de lichamelijke toestand door hun arts als goed bestempeld dan van vrouwen, die deze stoornissen wel hadden gehad. Bij de groep van 65-74 jaar was dit verschil zelfs significant.

Glucosurie en hypertensie kwamen niet opvallend vaak samen voor. *Glucosurie* (diabetes in de anamnese) en *hart- en vaatafwijkingen* (met name hartafwijkingen bij percussie) gingen evenmin duidelijk samen.

Anamnestische gegevens en objectieve bevindingen. Deze twee soorten gegevens dekten elkaar wel min of meer, waar het nier- en/of blaasaandoeningen enerzijds en urine-afwijkingen anderzijds betrof. Dit was echter dikwijls niet het geval bij diabetes in de anamnese en glucosurie, en evenmin bij het oordeel van de onderzochte over de hoogte van zijn bloeddruk en de werkelijk gemeten tensie.

Niet eerder door de arts ontdekte afwijkingen

Welvaartsklasse. Het enige dat men aan de hand van de gegevens kon zeggen was dat van de groep van hen, bij wie ernstige tevoren onbekende afwijkingen werden gevonden, steeds relatief weinig leden zich in de welvaartsklasse met een inkomen van hoger dan ± de N.O.V.-uitkering, maar lager dan *f* 3.000,— per jaar, bevonden, en dat van deze groep vrij vaak juist leden zowel tot de laagste als tot de hoogste welvaartsklasse behoorden. De welvaartsklasse scheen dus niet samen te hangen met de frequentie van nog niet eerder ontdekte afwijkingen.

Subjectieve gezondheidsgevoelens. De bejaarden, bij wie geen tevoren onbekende afwijkingen resp. wel tevoren onbekende ernstige of niet ernstige

afwijkingen waren gevonden werden voor deze combinatie verdeeld over de groepen van hen, die tweemaal hadden verklaard zich gezond te voelen, die één- of tweemaal hadden gezegd zich matig gezond te achten en die ten minste éénmaal hadden aangegeven hun gezondheidstoestand slecht te vinden. De subjectieve gezondheid was dan naar verhouding het minst goed bij hen, bij wie geen tevoren onbekende afwijkingen waren aangetroffen.

Objectieve gezondheidstoestand. Tot de bejaarden, bij wie tevoren onbekende afwijkingen, zij het van niet ernstige aard, werden aangetroffen, behoorden naar verhouding het meeste zij, van wie de gezondheidstoestand door de onderzoekende arts als gunstig was beoordeeld. Daarentegen werd de toestand van hen, bij wie ernstige, tevoren niet bekende afwijkingen waren gevonden, naar verhouding het meest als matig of zelfs als slecht bestempeld.

Tijdstip, waarop laatste geneeskundige behandeling plaatsvond. In de groep van bejaarden, die in de periode van 3 maanden, voorafgaande aan het onderzoek, onder medische behandeling waren geweest, bleek het percentage van hen bij wie geen tevoren onbekende afwijkingen werden gevonden steeds groter te zijn dan de percentages van hen bij wie dit wèl het geval was. Daarentegen was in de groep van hen, die al langer dan één jaar niet meer onder doktershanden waren, het percentage van hen, bij wie ernstige, tevoren onbekende afwijkingen werden gevonden, steeds hoger dan het percentage van hen, bij wie slechts geringe, eerder niet bekende, afwijkingen werden aangetroffen en steeds zelfs aanzienlijk hoger dan het percentage van hen, bij wie geen, tevoren onbekende afwijkingen werden gevonden.

Hinderlijke klachten, waarvoor de arts niet was geraadpleegd. Uit de gegevens viel af te leiden, dat wanneer alle bejaarden, die hinderlijke klachten hadden, zich metterdaad tot een arts zouden hebben gewend, minder tevoren onbekende afwijkingen zouden zijn gevonden, hetgeen overigens wel voor de hand ligt.

Diastolische bloeddruk

Rookgewoonten. Wat de rookgewoonten betreft, werden voor deze bewerking vier groepen onderscheiden.

Van een bepaald verband kon aan de hand van de gegevens voor deze vier groepen dan niet worden gesproken. Wel viel op, dat het percentage

bejaarden met een wat hoge diastolische tensie onder de niet-rokers relatief het hoogst was.

Huwelijkse staat en nageslacht. Een diastolische bloeddruk van 100 mm Hg of meer kwam naar verhouding ongeveer evenveel voor bij gehuwde als bij niet(meer) gehuwde bejaarden, en ook ongeveer evenveel bij vrouwen, die wel kinderen hadden voortgebracht als bij vrouwen, die dat niet hadden gedaan.

Resultaten geheugenproef, mede in verband met subjectieve gezondheidsgevoelens. Tussen de aanwezigheid van een diastolische hypertensie en de aantallen punten behaald bij de geheugenproef, kon geen verband worden gelegd. Subjectieve gezondheidsgevoelens beïnvloedden deze bevindingen niet.

Toestand van het gebit en rookgewoonten

Voor zover uit de gegevens iets viel af te leiden, scheen pruimen van weinig invloed te zijn geweest op de toestand van het eigen gebit, al viel wel op, dat het percentage van pruimers onder de prothesedragers zeer laag was (het ging echter om zeer kleine getallen). Voorts bleek, dat onder hen, die nog een redelijk of matig eigen gebit hadden betrekkelijk veel niet-rokers voorkwamen, terwijl onder hen, die een prothese hadden zich juist betrekkelijk veel zware rokers bevonden. De percentages zware rokers onder bejaarden met een redelijk of matig eigen gebit, bejaarden met een slecht eigen gebit en bejaarden met een prothese verschilden onderling significant van elkaar.

Bezinkingssnelheid der erytrocyten

Toestand van het gebit. Bejaarden met een slecht eigen gebit hadden significant meer een hoge bezinking dan bejaarden met een redelijk of matig eigen gebit of dan bejaarden met een prothese.

Objectieve gezondheid. Onder de bejaarden, die een hoge bezinking ($>$ 15 mm na 1 uur) hadden, bevonden zich significant meer personen met een objectief matige en met een objectief slechte gezondheid dan onder de bejaarden met een niet zo hoge bezinking ($<$ 15 mm na 1 uur).

Hemoglobinegehalte. Een hoge bezinking, die zoals onder meer uit dit onderzoek blijkt, nogal eens bij bejaarden voorkomt, ging vaak gepaard met een anemie (Hb $\leqslant$ 10 gr%), een aandoening, die eveneens vrij vaak bij deze groep der bevolking wordt aangetroffen. Er dient echter op te

worden gewezen dat bij dit onderzoek de absolute aantallen van bejaarden met anemie slechts vrij klein waren, zodat dit tot voorzichtigheid maant bij het trekken van conclusies. Bovendien kunnen beide verschijnselen tesamen afhankelijk zijn van andere factoren.

Urine-afwijkingen. Ook het voorkomen van urine-afwijkingen ging in zekere mate samen met de aanwezigheid van een hoge bezinking. Er bestond vooral een samengaan van een hoge bezinking met albuminurie.

Fietsen en objectieve gezondheid

Overeenkomstig de verwachting (brom)fietsten bejaarden, van wie de lichamelijke toestand als gunstig werd beoordeeld, over het algemeen meer dan bejaarden, van wie de gezondheid niet meer zo goed was.

Zich vervelen en eenzaam en/of teruggetrokken zijn

Ook hier ging het om een voor de hand liggende veronderstelling aan de werkelijkheid te toetsen: nl. dat bejaarden die zich nooit verveelden, ook minder teruggetrokken zouden zijn en/of zich minder eenzaam zouden voelen dan bejaarden die zich soms of geregeld wel verveelden. Inderdaad bleek deze veronderstelling in overeenstemming met de bevindingen te zijn.

Resultaten van de geheugenproef

Pensionering. Bij de verschillende onderdelen van de geheugenproef behaalden over het algemeen meer bejaarden, die nog werkten, goede resultaten dan reeds gepensioneerde personen. De resultaten van de volledige test waren dan ook bij de eerstgenoemde groep beter dan bij de laatstgenoemde.

Afwijkingen bij percussie van hart en grote vaten. Alleen bij mannen was sprake van een zekere correlatie tussen de resultaten van de geheugentest en de genoemde afwijkingen. Nadere analyse van de meest gecorreleerde afwijkingen was echter niet mogelijk.

Tot slot werd een aantal belangrijke variabelen tegelijk onderling gecorreleerd. Bij deze berekeningen werd tevens gepoogd de invloed van een viertal grote groepen van ziekten te bepalen. De voornaamste resultaten van deze statistische bewerking waren:

1e. er bestond weinig onderlinge samenhang tussen de kenmerken: subjectieve en objectieve gezondheid, validiteit (t.a.v. traplopen, zich wassen en kleden), gewicht, lengte, zithoogte, expiratoire borstomtrek, ademexcursie, ademhalings- en polsfrequentie, systolische en diastolische bloeddruk, bezinkingssnelheid en eindresultaat van de geheugenproef. Wel werd enige correlatie gevonden tussen subjectieve en objectieve gezondheid en validiteit, tussen systolische en diastolische bloeddruk en tussen gewicht en lengte. Geen correlatie werd gevonden tussen bloeddruk enerzijds, en gewicht, lengte en leeftijd anderzijds.

2e. elke combinatie van ziektegroepen kan door slechts 8 à 9 van de 15 variabelen worden beschreven; de keuze van deze variabelen is echter wiskundig en medisch op velerlei wijzen te doen.

3e. kenmerken van een combinatie van ziektegroepen zijn niet zonder meer af te leiden uit de kenmerken van de ziektegroepen afzonderlijk.

De weergegeven resultaten maken het mogelijk zich een betrouwbaar beeld te vormen van vele verschijnselen en factoren, die bepalend zijn voor de gezondheid van de bejaarden. Verscheidene bevindingen tonen evenwel de noodzaak van diepergaand onderzoek aan. De huisartsen-onderzoekers vonden vrij veel afwijkingen van ernstige aard, ondanks het feit, dat een groot deel van de onderzochten nog kort tevoren onder medische behandeling was geweest. Dit wijst op het grote belang van een nauwkeurig geneeskundig onderzoek van bejaarden. Vervolgonderzoekingen zullen echter, en dan nog slechts ten dele, pas antwoord kunnen geven op de vraag, of periodiek geneeskundig onderzoek van bejaarden in het algemeen aanbevelenswaardig zou zijn.

Het is in hoge mate verheugend, dat dank zij de medewerking van vele gemeentelijke diensten en ziekenfondsen, van een groot aantal bejaarden en in het bijzonder van zovele huisartsen een dergelijk omvangrijk onderzoek naar de lichamelijke en geestelijke toestand van de bejaarden in Nederland heeft kunnen plaatsvinden.