some future date inevitably arise, and we must begin to plan for it now. Nevertheless, its future emergence cannot be allowed to hold up the control and eradication of endemic disease, because the promotion of health and prevention of disease is a basic human right, and it is recognized that control and eradication programmes must proceed concurrently with equally vigorous programmes of improved agricultural productivity and health education.

Conclusion

The mass campaign is among the best tools in our armamentarium for the control and eradication of communicable mass disease. Its use has brought untold benefit to millions in the underdeveloped and underprivileged regions of the world by preventing disease, promoting and maintaining health, and improving living standards. Internationally, it has considerably reduced the risk of transmission of exotic and dangerous disease to other parts of the world.

Scourges and pestilences of diseases which had decimated whole populations in developing countries in the past are now almost unknown in those forms. Twenty years ago yellow fever was one of the major endemic and epidemic diseases in tropical Africa. Now it has almost disappeared. Smallpox

and sleeping sickness have been or are being brought under control, and encouraging progress is being made against measles, poliomyelitis, tuberculosis, leprosy, and other diseases.

Unfortunately, however, many diseases remain a threat to millions. Cholera is still a menace. Though malaria has now been eradicated from a few countries, the fight against it has not progressed in other countries, notably in tropical Africa, as decisively as might be desired. The fight continues, however, and will eventually be successfully concluded.

Not the least of the contributions which mass campaigns have made to world health is that of improving the efficiency and standards of overall national health programmes. Successful campaigns against the most easily eradicated endemic diseases, such as yaws, are perhaps the most spectacular and effective means of arousing health consciousness and maintaining public confidence in the health services, particularly in backward communities. They are a useful means also of creating a reservoir of trained auxiliary staff.

Expenditure on mass campaigns is a sound investment in health. It yields rich dividends. The health services, particularly in developing countries, are the foundation stone of all social, educational, and, above all, economic development. A country's economy can be built only on the shoulders of the quick, the hale, and the hearty. It can never be built on the shoulders of the sick, the lame, and the dead.

HOSPITAL TOPICS

New Self-administered Medical Questionnaire

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A new comprehensive medical questionnaire has been devised in an attempt to assess the merits of a questionnaire in saving time and eliciting forgotten symptoms, with a view ultimately to establishing priority of medical need, identifying relevant symptoms, planning consultation, and, in the research field, elucidation of the incidence of symptoms, epidemiology, and genetic factors.

To date the medical questionnaires that have been most widely used are the Cornell Medical Index and its successor, the Medical Data Index (Brodman *et al.*, 1951; Brodman and van Woerkom, 1966), and in the psychiatric field the Maudsley Personality Index and the Eysenck Personality Index, all of which have been well validated (Eysenck and Eysenck, 1964) but limited in scope. Paul Hall (personal communication, 1968), in Scandinavia, has extended the experience of questionnaires to outpatient investigation. A number of theoretical disadvantages of printed form questionnaires are well known, and include failure of patients to complete questionnaires of undue length, difficulty in analysing the mass of data, interference in doctor-patient relationship, and difficulty, with a fixed layout, in orientating patients towards appropriate symptoms.

A number of systems have been devised to assist a patient through a printed form questionnaire. Most recently, Mayne *et al.* (1968) described an experimental graphic display terminal in which photographic images are projected on a screen, the

patient records a response with a light pen, and by means of I.B.M. 7040 and 1050 computers the data are analysed so that a maximum of 302 questions could be asked with good patient performance and a satisfactory narrative type history obtained.

In the design of this questionnaire these problems were taken into consideration. In this pilot study we attempted to find out more about these problems, and if they could be overcome.

Material and Methods

The medical questionnaire was designed to include as many questions as were thought necessary to cover the important facts within a medical history, including all the major systems, general health, previous illness, operations, drugs, and family and social history. Throughout, the layout was such that ultimately computer analysis would be possible and alterations to individual questions feasible. A total number of 531 questions were created, grouped into sections (Table I). In order to assist the patients through such a large number of questions, a branching

TABLE I.—*Make-up of Questionnaire*

	No. of Question.
General	13
Symptomatology	369
Previous hospital treatment	17
Previous operations	18
Previous illness	38
Drug history	15
Family history	20
Social history	41
	531

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system was used. The patients were asked to answer all the questions concerning general health (13 questions), and all those relating to family (20 questions) and social history (41 questions).

The questions relating to symptomatology were divided into sections, each appropriate to a particular system, and they included a section each for psychiatric, endocrine, cardiovascular, respiratory, musculoskeletal, central nervous, alimentary, genitourinary, ophthalmic, otological, and oropharyngeal systems. Each section was headed by a major question which was obligatory—for example, for the alimentary system, "Do you have trouble with your appetite, or jaundice, nausea, vomiting, pain in the abdomen, or abnormalities of your bowel action?" If the answer to this question is "yes" the patient is directed to a total of 55 subsidiary questions analysing which of these symptoms are present and obtaining greater detail as regards, for example, site or nature of pain if present. If the answer is "no" the patient is directed to omit the subsidiary questions and pass directly to a similar head question for the succeeding section. An example of another section is shown in Fig. 1 with some of the subsidiary questions.

4054 DO YOU HAVE ANY DISCOMFORT OR PAIN IN YOUR CHEST, SWELLING OF THE ANKLES, BREATHLESSNESS OR PALPITATIONS? No ☐ Yes ☐

If the answer to this question is NO turn to FIRST YELLOW SECTION, Page No. 14.
If the answer to this question is YES answer all the following questions.

4055 Do you get pain or discomfort in the chest when you exert yourself? Yes ☐ No ☐ Don't Know ☐

4056 Do you get pain or discomfort in the chest if you are excited? Yes ☐ No ☐ Don't Know ☐

4057 Do you get pain or discomfort in the chest after having a big meal? Don't Know ☐ Yes ☐ No ☐

4058 Do you get pain or discomfort in the chest when you walk up a hill or climb stairs? Yes ☐ Don't Know ☐ No ☐

4059 Do you get pain or discomfort in the chest in bed at night? No ☐ Don't Know ☐ Yes ☐

4060 When you feel the pain or discomfort in your chest is it (a) worse or (b) better when you breathe deeply, or (c) don't know? a ☐ b ☐ c ☐

4061 When you feel the pain or discomfort in your chest does it disappear with exercise? Yes ☐ No ☐ Don't Know ☐

4062 When you feel the pain or discomfort in your chest does it get worse with exercise? Yes ☐ No ☐ Don't Know ☐

FIG. 1.—An example of the questionnaire.

In this way the patient was directed through all the major systems, and the same technique was used for the sections concerning previous illness, operations, and drug history. A minimum of 93 questions should be answered, with a variable maximum according to the number of sections completed. The head questions were all of the yes/no variety only.

In order to break any tendency to answer questions automatically, and to detect response sets, two types of question were incorporated with response of yes/no/don't know and (a), (b), (c), (d) variety. The place where the appropriate response was made by ticking was also varied, so that the "yes" response was not always in the first column. A number of contradictory questions were included within the same section, to assess inattention. Finally, whereas in the majority of questions a "yes" response indicated a positive answer, a number of questions were introduced requiring another answer to assess any tendency to answer "yes" indiscriminately—for example, "Is your weight steady?" as opposed to, "Have you lost weight?" (Eysenck and Eysenck, 1963a, 1963b).

The questionnaire was given to successive male inpatients. They were simply asked to complete the questionnaire, following the instructions as printed. No additional instructions were given and all staff were told to give no aid. The total number of

patients who came under the period of study was 70. On return from the patients the questionnaires were checked quickly to see that all head sections had been completed; if not, these were handed back and patients were asked to complete them (this took approximately two minutes). No other corrections or checks were made.

A count was made of the number of questions answered in the questionnaire and the number of positive answers, negative answers, and "don't knows" noted. Errors were counted, and the questionnaire was then compared with the standard medical notes of that admission in terms of numbers of positive and negative or doubtful facts. The contradictions between the two and the facts present only in the standard notes were determined.

Results

Of the 70 patients aged 13 to 82 (mean 54) years available for study, 56 (80%) were physically capable of completing the questionnaire. Of the 14 physically incapable, six were semi-conscious or unconscious, three could not read or write (educational), one could not understand English. Of those physically capable of completing the questionnaire 52 (93%) did so satisfactorily; only four were apparently incapable of following the branching system—omitting large blocks of questions and making other errors. Nearly all patients commented on the questionnaire in complimentary terms; only one patient complained about it.

The mean number of questions answered is given in Table II; it can be seen that the preponderance of negative answers decreases when the symptomatology sections are analysed separately, suggesting that the branching system is moderately successful in directing patients to those groups of questions which are likely to give more positive information.

TABLE II

	In Whole Questionary		In Symptomatology Sections	
	Mean	Range	Mean	Range
Questions answered				
Yes	72	6-202	50	0-182
No	163	79-288	82	23-173
Don't know ..	10	0-61	7	0-41

As expected, many more facts, both positive and negative, were obtained from the questionnaires than from the standard notes, in that 49 of the 52 questionnaires completed contained more positive facts than the corresponding standard notes (Table III), a mean of 41 facts being obtained from these, and in all questionnaires there was an excess of negative information.

TABLE III.—Comparison of Questionnaires with Standard Notes

	No.	%	Difference in Numbers of Facts	
			Mean	Range
<i>Whole Questionary</i>				
Questionnaires producing more positive information	49	94	41	(1-168)
Standard notes producing more positive information	3	6	19	(7-40)
Questionnaires producing more negative information	52	100	153	(42-271)
Notes producing more negative information	0	0	—	—
<i>Symptomatology Sections</i>				
Sections of questionnaire producing more positive information	42	81	+ 34	(0-97)
Standard notes producing more positive information	9	17	- 11	(1-18)
Sections producing more negative information	52	100	+ 74	(3-145)
Notes producing more negative information	0	0	—	—

When the symptomatology sections were analysed separately, again the majority, 42 (81%), contained more positive information and all had more negative information.

A mean of 6 errors (range 0–32) were made in completing each questionnaire, but on only three occasions were contradictory answers given, and on two occasions two answers were given to the same question, the rest being those of simple omission of questions. In 49 (94%) out of the 52 questionnaires some facts were present in the notes alone, with a mean number of 7 (range 0–25) facts per set analysed. These may be construed as omissions of questions from the questionnaire, and the addition of a few questions is required. Furthermore, 36 (69%) questionnaires contained straight contradictions with the standard notes, with a mean of one contradiction per set analysed (range 0–5). These seemed to be due to misinterpretation of what constituted a present symptom, an error which should be clarified by more careful wording of the instruction sheet.

Comparison of those questions whose meaning was reversed so that "yes" became the negative answer with those in which "yes" remained the positive answer showed no statistical difference ($P=0.5$), and thus there was no tendency to answer "yes" indiscriminately. Analysis of the answers in each column and comparison with the expected answers in each column showed no statistical difference—that is, no tendency to answer the first, second, or third column automatically.

Discussion and Conclusions

It appears that the majority of patients (94%) who are capable of reading and writing are also capable of completing a questionnaire of considerable length given a branching system such as is described. This compares well with Mayne's computer-assisted medical questionnaire. No antipathy appeared to be provoked

except on one occasion, and the contrary was true in the majority of patients. The time taken to complete the questionnaire was not assessed, since the aim is to use it primarily for outpatients, the questionnaire being sent to the patient in advance of his outpatient appointment.

Our choice of patients for this pilot study was governed by ease of administration. It is recognized that these patients had been taken through a standard medical history on at least one occasion, and to some extent been "educated" in their symptoms. With this questionnaire it appears that the questions are answered "truthfully" in that there was no tendency to answer in any particular column or way. It was not felt necessary to incorporate "lie" response questions as is possibly relevant in a psychiatric questionnaire (Gibson, 1962).

Verification of this questionnaire should prove relatively easy with computer analysis, as the layout is such that a question can be altered or withdrawn, and the results of this study would suggest that such verification should be undertaken. With extension to a wider group of patients the questionnaire should provide useful additional information for the standard medical history, and a considerable amount of information should be obtained for further research purposes.

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Hospital Scientific and Technical Services

The Committee on Hospital Scientific and Technical Services* was set up in July 1967 with the following terms of reference: "To consider the future organization and development of hospital scientific and technical services in National Health Service hospitals and the broad pattern of staffing required and to make recommendations." The following extracts are taken from the Committee's report, which was published on 5 December.

"Our terms of reference are wide. It seemed to us that our task was to take stock of the present position, to forecast the trends in the hospital scientific and technical services and see what implications these might have for future patterns of organization and staffing; to consider whether a new organization and structure would be advantageous, but if so, not necessarily to recommend how such a structure could be applied to each individual part of the present service. Our report is therefore comparatively short and schematic; we have deliberately refrained from setting out in detail what should constitute the Hospital Scientific Service which we in fact recommend, or exactly which grades of staff should be included and at which level they should be incorporated.

"We were much impressed by the weight of opinion in favour of a career structure for the non-medical scientists and technicians similar to that provided by the Scientific Civil Service or Medical Research Council. It was also generally recognized that centralization of services was tending to become more necessary in the interests of efficiency, in view of the increasing cost and sophistication of equipment and the greater application of scientific techniques. Many papers recommended a grouped department of 'clinical science,' 'technological services,' 'medical science,' or 'physical science'; others favoured a grouping of physiological services, in a department of 'clinical measurement.' There were few who disagreed with the view that there should be a central pool of scientific and technical staff who could, if necessary, be seconded from time to time for varying periods to a clinical team when required, rather than be permanently established in a clinical unit. Exclusive attachments to a clinical unit were said to result in the people concerned getting out of touch with the main stream of scientific developments, the service might have to depend on one individual, and the units were inadequately equipped or the equipment under-utilized. There were several comments on the advantages to be gained from having non-medical scientists working in departments and specialties where they

are seldom found at present—for example, in the intensive care units, the diagnostic x-ray department, in haematology and microbiology.

"There was strong support, both from medical and non-medical organizations, for the view that the relationship between the clinician and the non-medically qualified scientist should be one of collaboration, that senior scientists should have comparable status to consultant medical staff, and that they should be members of the appropriate hospital advisory committees.

"Emphasis was laid upon the importance of continuous training and retraining of technicians in order to encourage them to keep abreast of changing techniques. It was suggested that when training of technical staff was under the influence of a professional body or staff association, it tended to be rigid, and to reflect the ambitions of the body concerned to advance its own status rather than a desire to meet the real needs of the service. The influence of 'state registration' in bringing order into the Professions Supplementary to Medicine was mentioned, and there were proposals that other classes of technicians should be assimilated to the present Medical Laboratory Technician staffing structure. But several submissions severely criticized the rigidity of the present application of the 'state registration' provisions in preventing

*The members of the Committee were Sir SOLLY ZUCKERMAN, F.R.S. (chairman); Professor A. R. CURRIE; Dr. R. GADDIE; Professor J. E. ROBERTS; Mr. A. B. SCOTT; Professor J. P. SHILLINGFORD; and Professor S. SHONE.