Middle Articles

CONTEMPORARY THEMES

Ethics and Aesthetics of Medical Research*

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The Reason Why

The main reason for looking into medical research at this moment, nationally and internationally, from the top and from below, is that it has reached a kind of cross-roads, and it appears, from many signs on all levels, that it will have to submit to some sort of reorganization—maybe even reformation. One might argue that the successes of medical research, especially during the last 20 years have been so great that the question arises, Why tinker with the basis from which they sprang? However, the fundamental and therapeutic problems still to be

latter being to a large extent organizational. There are signs of an increase in the number of experimental international centres; but at present, apart from the European Centre of Nuclear Research, the most important activities are carried out in study groups, mainly in the epidemiological field. Each national set-up consists, except for Russia and Iron Curtain countries, of a private and a public sector with links between them. A number of regions very active in medical research, such as Scandinavia, Switzerland, Austria, Canada, Australia, etc., have not been included in the present review, simply because of lack of space. Three examples are given in brief—Britain, France, and the United States—to illustrate the situation on a national level.

Britain

Annual reports, university calendars, etc., give a detailed picture of the main features in Britain, where the universities (and some colleges of technology) provide facilities for various approaches of medical research in preclinical departments and in their medical schools and hospitals. Postgraduate teaching institutions (as represented by the British Postgraduate Medical Federation in a unique arrangement, the Lister Institute, and the London School of Hygiene and Tropical Medicine) join hands also with non-university organizations such as the Royal Colleges (Institute of Basic Medical Sciences). There also exists a link between one of these colleges and a private institute, the Imperial Cancer Research Fund. Of other such organizations the most prominent are the Royal Institution, the Nuffield Institute, the Strangeways Laboratories in Cambridge, and, in a strongly supportive form, the Wellcome Trust, the British Empire Cancer Campaign, and others.

The outstanding contributions to medical and pharmaceutical research made by the industrial research laboratories place them in a prominent position. There remains the hub of public research, the Medical Research Council, with its National Institute for Medical Research, more than 70 research units distributed all over the country, and about 10 research groups. The units carry a strong emphasis on the clinical research side. Like the National Institutes of Health in America, the Medical Research Council provides scholarships, grants, and support for the larger institutions, such as the Strangeways Laboratories and the Institute of Cancer Research.

TABLE I
Organized Medical Research

solved, the diseases to be diminished or eradicated, are more complex than ever. Moreover, the world is quickly changing; medical research, while becoming costlier each year, is no longer among the very top priorities of nations and mankind. Consequently any intensified attack on increasingly tough and slow-yielding programmes may be paralleled by decreasing spending-power, brain-power, and manpower. This is why remedial steps ought to be taken, preceded by a vast amount of hard thinking.

Present Position

The first objective is to obtain a rough outline of the present state of medical research, possibly on a global scale. Table I shows divisions into national and international groupings, the

* Abridged from a lecture given in the Pharmacology Department, University College, London, on 27 January 1966.

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France

France's equivalent to the Medical Research Council is the Institut National de la Santé et de la Recherche Médicale, which developed in 1947 from the older Institut National d'Hygiène. This organization, together with the medical branches of Centre National de la Recherche Scientifique, the academic centres combined in Les Centres Hospitaliers et Universitaires, and a number of private institutions (Pasteur, Gustave Roussy, etc.), and laboratories of the pharmaceutical industry, have provided, particularly during the last 10 years, improvements, developments, and new buildings which will make good the delay due to years of disaster and difficulties. Full details of the impressive advance in research in France are given in a report by the Delegation Générale à la Recherche Scientifique et Technique (1965), and the national situation is comparable to that in Britain in 1959. Europe as a whole, as reviewed by Grant, Hutterer, and Metzner (1964), faces difficulties not so much because of lack of money, manpower, etc., but because of rigidity of attitude. The position, one can hope from more recent developments, may improve at a reasonable pace, though a great amount of work has still to be done.

United States

Across the Atlantic the very large structure of the American public efforts in medical research, the National Institutes of Health (Public Health Service Publication 81, 1963), started in its present form in 1930 and has since grown tremendously in size, interest, staff, and spending-power. Its importance rests with the provision not only of the cost of its intramural research, carried out in numerous buildings in Bethesda, but also of large sums, at least up to now, for extramural research in universities, institutes, research places abroad, and even industrial laboratories. Everything seemed to be prosperous, and the conditions happy, until four years ago, when an article appeared in a medical magazine with the dramatic headlines: "National Institutes of Health, Critical Point in U.S. Research" (*Medical World News*, 1962). The emergency was seemingly caused by many factors; the most important was that the universities and medical schools were depriving the Institutes of Health of a great number of talented scientists in order to satisfy their own urgent needs. It seems, strangely enough, that the salaries offered by the universities were more attractive than those that the National Institutes could afford internally. Consequently, on Presidential initiative, a study of the Institutes' effectiveness was undertaken by the Wooldridge Committee (1965). Its report makes a number of recommendations, none of them of major character. The question could be asked, whether for such a study, instead of having a number of distinguished scientists, mainly from universities, on the committee or panels, an international committee comprising intelligent laymen, administrators, industrialists, politicians, together with some wise scientists, could have produced a more forward-looking report.

Whatever the possible shortcomings of the French and American reports may be, are we to have similar reviews and forethoughts in this country, perhaps following the findings of the Sainsbury Drug Committee and the Todd Commission on Medical Education?

View from the Top

Finance

First, some problems such as finance and administration have to be faced.

The total sum available for medical research on a national public level depends on the degree of priority given to the financial aspect by each nation and to that nation's gross national product: £28,910 million for Britain and

£224,500 million for the United States, both in 1964. Of course, industrial research in the pharmaceutical field is not immediately affected by these figures, as it is often subject to international conditions, and moneys from charitable sources depend more on generosity, which in turn depends on the complex irrational feeling of "paying off our debts to fate."

Comparing British public spending in that year on medical research with that through the National Institutes of Health, one cannot help being impressed by the enormous increase in the American contributions which, like the British resources, support a large number of extramural activities. If we take into consideration the higher gross national product and the threefold to fourfold larger population of the United States, it seems that the amount spent by Britain on medical research through the Medical Research Council—£7 million—is proportionally less than what is being spent across the Atlantic (National Institutes of Health spent about £250 million to £300 million in 1964). Of course the share of the University Grants Committee expenditure dedicated to medical research in universities should reduce this discrepancy.

What happens across the Channel? During the last 10 years the Institut National de la Santé et de la Recherche Médicale has increased its budget to 14 to 15 times its former level. In 1963 the total expenditure of about £17.5 million, which includes teaching and private institutes, was of a similar order to that of Britain, making allowances again for the additional share of the University Grants Committee's budget for medical research and teaching and for the spending of private institutions and the distribution from charitable sources. The question, as posed at the beginning—Will it be possible to maintain or even increase the rate of expenditure for medical research over the next decade?—must be answered soon.

Administration

This is where administration comes in, which for the "administered" very often implies unnecessary and restrictive measures by people who "do not know." This is, as everybody knows, a grossly exaggerated view. The heads of departments, directors, and committees have to deal, as in every sound enterprise, with finances, manpower, and establishment of priorities and co-ordination. The obvious differences between academic and commercial organizations are the absence of profit motives in non-industrial laboratories and the greater freedom accorded to the academic research worker. What must worry the managing personnel from time to time is that the average scientist, without experience in industry, often thinks that pennies come from heaven and that near-unlimited spending of funds is consistent with high-level work and brilliant results. Hinshelwood (1965), in his address to the British Association Meeting, in relation to all science, thought that "by some miracle we achieve an administration capable of fostering effort while curbing extravagance and waste."

The problem is how much the administrative side of medical research can keep "waste and extravagance" inside reasonable limits without curtailing the necessary freedom of research. Does one need a "miracle" to obtain an ideal administrative set-up? Or is the thinking of bio-scientists, their seniors, and lay-members behind the times? Do they ignore the considerable size of some institutes and departments and the great number of staff in them, and allow in many cases the scientific brilliance of leaders to be considered identical with a first-class administrative capacity? Or, the other way round (*vide* Pasteur Institute and the difficulties in the Istituto Superiore di Sanita, as reported in the national press), do they allow non-scientists to dominate the scene without proper consultation with the scientific staff? In the first case it is difficult to see why heads of university departments, institutes, and units who have the responsibility for a budget the size of an English county should not have adult courses in administration such as those arranged for industrial research

leaders or, in the Business School at Harvard University, for anybody from a potential tycoon to a general. On the other hand, the lay members of any administrative and executive committee should be given more frequent opportunities to get into close contact with the man at the laboratory bench or in the operating-theatre so as to find out his difficulties, hopes, and frustrations. In this way they will see for themselves that medical-scientific work, in spite of its inherent logic, is often a messy process from the administrative point of view. The scientific leader, however, must accept the fact that the numbers of members on his staff will determine the total financial, and consequently human, involvement.

View from Below

How does the situation appear to the average research worker if the two items which were blamed for the brain drain of recent years—salaries and facilities—are reasonably satisfactory? There are forces (see Table II), physical and mental, which act on him and which he has to resist in one instance and yield to in another. Divisions between the many disciplines, particularly in medical research, need constant bridging operations, and consequently the pressures arising from these gaps have to be resisted.

TABLE II.—*Forces Pressing on Research Workers*

Motivation and preference for certain rewards play a large part in the individual's decisions during his professional life. Money and power cannot be the main reward, otherwise the brain drain could never have been slowed down (Oversea Migration Board, 1965). Public recognition is certainly a strong driving force. Apart from moral reasons—the urge to help suffering mankind, etc.—there is some other impelling cause. Hinshelwood (1965) described it in this way: “What they had in common was the passion for knowledge and for the unravelling of mysteries . . . another major fact is the essentially aesthetic nature of the appeal which their work made to them.”

There are further problems, and, though each merits a thorough treatment of its own, the relation of research and its adepts to teaching, programme-making, and publications will have to be dealt with concisely within the compass of this short report.

The obvious differences between university departments and research institutes is simply that in the former some teaching is obligatory, while in the latter opinions on teaching commitments are divided. The main difficulty in university departments is the establishment of a proper balance between the three activities of undergraduate and postgraduate teaching and of research. On the Continent, industrial research staff participate, on the basis of university titles, in academic life by lecturing to students and by themselves having research students. Such an arrangement, though existing in certain

places in Britain, would be of great advantage if more generally applied. The reluctance of some members in institutes and research units to give up something like 10 to 15% of their time to teaching (although there are quite a number who have a strong desire to instruct young people and who receive great stimulation in return) is best answered by a sentence from the Robbins Report (1965), in the chapter on teachers and students: “There is no borderline between teaching and research; they are complementary and overlapping activities.” There are, of course, excellent research workers who think they are genuinely incapable of imparting their knowledge to younger colleagues; but there is always an element of egocentricity connected with that attitude, and this ought to be remedied at an early stage (see Fendall, 1966).

It is certain that somebody at some time must have been asked the question: How do research programmes originate and develop, especially in the medical field? There is no simple answer. The problem concerns research strategy and tactics, but the birth and nurturing of programmes happens in a much more random fashion than anyone would care to see. Charles Huggins (1965) talks about the business of discovery in medical sciences, but, with others, agrees that creative research flourishes most successfully in an atmosphere of individual liberty of choice and that creativeness cannot be taught, though it is sometimes transformed into a contagious process.

Can the world, however, economically, in respect to brain-power and programme priorities, afford this complete freedom without first receiving answers to the further questions: (1) Who originates a piece of work? (2) By what processes are effective programmes established and, even more important, terminated? (3) Who and what decides the priorities between several programmes? (4) In what form of teams, groups, collaborative structures, single workers, is such a programme brought to a successful conclusion?

There can be little doubt that personalities with character, staying-power and imagination still dominate the scene, particularly of smaller organizations, whether as lone wolves, team leaders, or originators of cooperative and collaborative efforts. Naturally, industrial research, aiming at target A (decided on for clinical and competitive reasons) and wishing to hit this target squarely, will through its research directors and laboratory leaders work out a detailed programme and cooperative measures to increase the chances of success. Academic concerns, though involved in specific diseases or medical problems, are under less restraint, and may be allowed to venture into hitting targets B to Z. But this can be avoided, at least sometimes, if the rigid frontiers of scientific and medical disciplines are broken down.

The problems of communications are, of course, shared with all other research activities. Table III shows most of the general methods of making results available to the outside world. Nobody can deny that the papers are increasing in geometric progression, that reviews and progress reports multiply continuously, that meetings—local, national, European, Asian, American—abound in every field of basic and applied medical science, and that even international congresses are more a gathering of the tribes than an intimate exchange of views. One ought to raise a cheer for the Ciba or Gordon type of conference.

Summary

Many things have been unsaid, and the rather aphoristic treatment of many important points, rather arbitrarily chosen,

TABLE III.—*Communications with the Outside World*

Publications: Preliminary notes or letters. Scientific and medical journals. Publication of major or all contributions in book form.
Reviews, etc.: Progress reports. Advances. Reviews. Books on scientific subjects. Monographs.
Information: Abstracts. Indices. Encyclopaedic references.
Meetings: National or international. Medical-scientific gatherings. Conferences. Congresses. Symposia—basic and applied—présis and abstracts.

will be apparent. In retrospect, it may be said that this article could less pretentiously have been called "Organization and Reorganization of Some Aspects of Medical Research." But it is still the ethical and aesthetic side that ought to be considered as a valid form of appreciation. (The term ethics is not used here in the meaning of attitudes *vis-à-vis* animal experimentation and first trials of new forms of treatment in man. That is another story.) There are many members of the fraternity who have hardly strayed from its strict and dedicational rules. But with the swelling of the ranks of medical research workers quite a number think that the world owes them something. It may shatter some if it is stated that the world owes them very little unless they, as individuals, do their best *vis-à-vis* laboratories, departments, universities, research units, institutes, hospitals, and the community at large. At the same time this community, if it wants improved knowledge of medical matters and health, must, as citizens and voters, decide what percentage of the gross national product should be spent on medical research, bearing in mind other pressing needs. In contrast aesthetics are a more personal matter and were well described by Huggins (1965) when he stated: "Science and art are twins and both are children of fantasy."

Changes are always necessary and not always born out of rebellious thoughts: they are adjustments to altered circumstances. There are many signs that national and international consideration is being given to medical research and its future needs: the Todd Commission in the U.K., the Wooldridge (1965) and Richardson Committees in the U.S.A., the deliberations of the Délégation Générale à la Recherche Scientifique et Technique (1965) in France, and the many ideas and actions provided by individuals from all over the world, are strong evidence of this.

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AT HOME AND ABROAD

Medicare: Health Insurance for the Elderly

[FROM A SPECIAL CORRESPONDENT]

On 1 July 1966 a law will start operating in the United States to provide health insurance for 19 million people who are aged 65 and over. This scheme, called Medicare, is divided into two parts—the one to provide compulsory hospital insurance for the elderly, the other a voluntary scheme to help in the payment of doctors' bills and other medical expenses.

Hospital Insurance Plan

The hospital insurance plan will relieve the elderly of much of the cost of hospital fees, though some of the financial burden imposed by severe illness will still have to be carried by the individual. For example, a limit of 90 days' hospital care is set for the duration of each "spell of illness" and for this period the patient is required to pay \$40 during the first 60 days and then \$10 a day for each of the succeeding 30 days. Board and drugs in hospital are provided under the scheme, but not the cost of doctors' services other than of junior medical staff. Laboratory tests and radiographs will be included only if carried out by technicians, but the services of a radiologist or pathologist will be paid for under the voluntary supplementary plan. Likewise, the patient may receive physiotherapy free, but not the opinion of a physical medicine specialist. This situation has arisen because physicians' and surgeons' services, but not those of technicians, are specifically excluded from payment under the hospital scheme.

Mental Illness

The provisions for mental illness differ from those for the physically ill, as reimbursement for the cost of in-patient psychiatric care is limited to a total of 190 days in a lifetime. Admission to a mental ward is covered only if the physician will certify that such treatment can reasonably be expected to produce clinical improvement. A similar stipulation must also be fulfilled before tuberculosis can be treated in hospital, though

the chest physician may also admit a patient with tuberculosis in order to render his disease non-communicable.

The hospital insurance plan is specifically designed not to include the expenses of the medical profession. The cost of all doctors' services, except those of junior staff in training, cannot be paid under this part of the scheme.

Besides subsidizing admission to hospital, the hospital insurance will also cover much of the cost of care in a nursing or convalescent home. If the patient has been in hospital for three days or more, he becomes eligible to receive up to 100 days' extended care. The first 20 days of this extended care are free, but thereafter the individual is required to contribute \$5 a day. Finally, when the patient is allowed home, he may receive up to 100 free health visits from any of the auxiliary medical services such as district nursing or physiotherapy.

Not only does the hospital scheme cover expenses originating in hospital, but it will also pay 80% of the cost of outpatient diagnostic services during a 20-day period, except for the first \$20 incurred in that period.

Financing of Scheme

This hospital insurance scheme will be financed from a Federal Trust Fund which, starting in 1966, will be accumulated from a payroll tax of 0.35% on an earnings limit of up to \$6,600 a year for each worker and an equal amount from his employer. This money will be used to pay for services received in the various institutions that are accredited by the Government. To qualify for recognition the hospital or nursing home must attain certain standards. In practice, normally accepted criteria of adequacy will be used, though an innovation termed the Utilization Review Plan will assess the cost-effectiveness of the hospital; the purpose of this is to ensure that the availability of Federal money does not lead the hospital to inefficiency and waste of its resources. A Review Committee may consist of only medical men, provided at least one member of the committee does not have a financial interest in the institution under review.