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THE INTEGRATION OF MEDICINE

THE ENDEAVOUR OF THOMAS LINACRE AND ITS PRESENT SIGNIFICANCE*

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To be invited to deliver the Linacre Lecture is at once an honour and a responsibility. I am, of course, aware that this is no memorial lecture. Linacre himself, in providing for its endowment, was singularly free from that failing, so prevalent in his age, of desiring to sustain his reputation in the minds of future generations. He was content with a greater aim—to provide for the better dissemination of medical learning. And it has been the willing task of many of my predecessors to fulfil his wishes by contributing liberally from their own special knowledge.

Yet one cannot help being interested in a man who made such a lasting impression on learning in this country; for it is, I think, a safe deduction that a reputation which can survive the passage of more than four centuries must have been based upon a life of more than usual significance. Each generation has its own perplexities, and with the passage of time the social context and the philosophic idiom in which these are expressed alter so greatly that for later ages the particular problems which faced their predecessors have, at first sight, little more than the picturesque unreality of the costumes in a Holbein painting. Yet human nature changes relatively slowly, and if we can pierce the haze of history we may still draw lessons of profit to ourselves from the success or failure of our predecessors to appreciate and to deal with the issues of their day.

It is this theme that I wish to develop. In what lay the significance of Linacre's work? Can we find in his endeavours lessons of relevance to our own situation?

Linacre's Career

The facts about Thomas Linacre's life, although meagre, are well known. He was born at Canterbury, probably in the year 1460, and died on October 20, 1524. He was educated at Oxford, where he became a Fellow of All Souls, and was one of that small band of men who were there developing the study of Greek. Among his pupils was the future Sir Thomas More. About the year 1485 he went with the embassy of Selling to Italy, where he became associated with the most accomplished Greek scholars of the age. Two years later we find him at Padua, studying medicine, in which subject he obtained his doctorate with distinction. Shortly afterwards he returned to this country, where the Universities of Oxford and Cambridge, with that liberality which characterized the mediaeval communi-

ties of learning, readily conferred upon him their doctorates of medicine in virtue of his degree from Padua. He settled again in Oxford, and during that period Erasmus, attracted by his fame as a humanist, came to him in order to learn Greek.

At the turn of the century, however, a decisive change took place in Linacre's life; he was appointed tutor to Arthur, Prince of Wales, and left the university for the Court. In those days medicine was not the separate speciality that it is to-day, and it was customary for its more distinguished practitioners to combine it with theology and general learning. It was therefore not unusual that Linacre became, not only tutor, but physician to the young Prince, nor surprising that before long we find him the leading physician of his time.

In this position it was inevitable that he should be involved in the efforts that were being made to reform the organization of medicine in this country, efforts which culminated in the foundation, by King Henry VIII, of the Royal College of Physicians of London.

Throughout this period, however, Linacre, despite his concern with practical affairs, succeeded in reserving a portion of his time for the pursuit of learning. For him this took a scholarly form. It was his purpose to produce accurate translations, into Latin, of Greek authors whose works had hitherto only been available, if at all, in garbled and incomplete versions reached through the medium of Arabic; and, indeed, it is in the field of grammar that we find the only original work to which Linacre can lay claim.

In 1509 Linacre was ordained; but this implied no important change in his way of life, for in those days it was an accepted, and indeed favoured, custom for the priesthood to combine medical and spiritual ministrations. It did, however, allow him to receive a plurality of benefices in accordance with the custom of the day.

Linacre's life was now drawing to its close. Gradually he withdrew from active practice and devoted more and more of his time to scholarship. Six years after the foundation of the College of Physicians he died; but it is in keeping with his life that his will should bear evidence of his concern for the promotion of learning. In that will he provided for the endowment of lectureships at Oxford and at Cambridge in which the lecturer was to expound certain named classical medical texts. It is one of those lectureships that I have the honour to hold this afternoon.

Such, in brief, was Linacre's life; and those of us whose own lives have led us into teaching, research,

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the practice of medicine, and the development of administration must, as we read of it, be conscious of a sympathetic gleam of recognition as we see how clearly the pattern repeats itself even to-day. But what does it all amount to? Was he merely a successful man within the context of his time; or had he a greater claim to consideration?

His Fame

In his lifetime Linacre achieved fame as a physician, a grammarian, a medical scholar, and an administrator. Did he, in any of these, show a vision and understanding such as would justify a title to greatness? or was he only carried by the tide of his time, and is his fame merely eponymous?

Linacre was a successful practising physician. But equally so were many of his contemporaries and successors whose names have now faded from memory.

He has been hailed as one of the founders of English humanism, but this was certainly not his aim. His object in acquiring an accurate knowledge of Greek was to reach truths that he was convinced were of vital importance to mankind and which, he believed, lay hidden in the original texts. His object in teaching Greek was to enable others to do likewise. To the essentially serious mind of his age, any other reason for his labours would have savoured of frivolity or even impiety, and it is doubtful whether he would ever have appreciated, let alone approved, the elegant concept which humanism implies to modern ears.

To the advancement of medical knowledge Linacre made no original contribution. His activities in this field were confined to translating Galen. Yet within a few years of his death Paracelsus was to preface his medical lectures in Basle by publicly burning these works, in evidence of his belief that their teaching was an impediment to progress.

It is evident that on none of these counts can we explain Linacre's title to consideration. There remains his contribution to the organization of medicine.

His Medical Background

To appreciate the extent of the changes which were brought about in the early part of the sixteenth century it is necessary first to glance at the state of medicine in this country before the new design took shape.

At that time, even in relation to existing knowledge, only a small proportion of those practising physic could be said to be instructed. These were the graduates of the universities, and, as in the case of Linacre himself, most were also ecclesiastics. The general practice of medicine lay in the hands of barber surgeons and apothecaries, and of self-styled practitioners over whose ignorant pretensions there was little control. But the situation was not entirely unregulated. The formal licence to practise both physic and surgery was by long tradition vested in the Church, and this provision probably represented the best that had hitherto been possible. Throughout the Middle Ages the Church had been the main repository of learning, and care of the indigent sick had been its noble duty. To what other institution could mediaeval society have better entrusted the preservation of medical knowledge and the criteria of medical competence?

By Linacre's time, however, the shortcomings of the existing arrangements were apparent to many thinking men. Knowledge was expanding. In Italy a new spirit of inquiry was abroad, and, although this had not, at least in medicine, ventured into originality, it was unearthing old learning with accuracy and in profusion. Small as was the actual accretion to knowledge, when compared with that of the next two centuries, it was still too much to be accommodated within the traditional professional structure of medicine; and the men of Linacre's generation were faced with an administrative problem containing all the classical components—an inadequacy, an abuse, and an established interest. Let us see what happened.

The New Design

In 1511 a new Act was promulgated. It was laid down that no person should practise physic or surgery within the City of London, or for a distance of seven miles around, unless he had first been examined, approved, and licensed either by the Bishop of London or by the Dean of St. Paul's, acting—and here is the important change—with the advice of four doctors of physic or four expert surgeons. Seven years later the College of Physicians of London was incorporated and empowered, independent of the hierarchy, to forbid from the practice of physic in London and within a precinct of seven miles around the city, any individual, graduates of Oxford and Cambridge excepted, who was not licensed by the President and the College. Four years later these provisions were extended to the whole country.

Now it will be evident to any who have ever engaged in promoting changes in social organization that these developments could never have occurred with such unerring speed unless some individual of outstanding ability had made them his concern. What claim has Linacre to be considered that person?

In his youth Linacre had visited Italy, and, whilst there, had become familiar with associations of learned men, unfettered by ecclesiastical control, devoting themselves to the advancement of their subjects. In the year 1501 Linacre was summoned to the English Court. Throughout his whole life he had been intimate with Colet, Dean of St. Paul's; and Cuthbert Tunstall, Bishop of London, was sufficiently close to him to act as an executor of his will. It seems in the highest degree improbable that high dignitaries of the Church would have consented, save on the persuasion of a close and trusted friend, to the limitation of ecclesiastical privilege involved by the new provisions for licensing to the practice of medicine.

Linacre was physician to King Henry VIII. Perhaps more important was his relationship to the then all-powerful Thomas Wolsey, Cardinal of St. Cecilia and Archbishop of York. Linacre himself was, although an absentee, first prebend and then precentor of York; and he dedicated to Wolsey his translation of "Galen on the Use of the Pulse." Then, as now, those who aim at social change must have, or gain, access to the sources of social power. In those days power was personal, and close relationships with those who possessed it would have been indispensable to any man seeking to promote such a revolutionary scheme as a College of Physicians, governing themselves and controlling admission to a profession as vital to society as medicine. It is evident that Linacre, more than any other man of his time, possessed such relationships. Add to this the fact that his fellow physicians elected him the first President of the new College, and I believe one can safely conclude that to him must belong the major credit for the new achievement.

But, large as this achievement is, it does not exceed that which we might expect from a competent administrator alive to the needs and the opportunities of his time. To prefer a title to greatness it must be shown that he built not only for the present but for the future; that he rose beyond expediency to statesmanship. At the root of every enduring human achievement lies an ideal; and it is on the continued realization of this ideal that the life of a human institution depends. It is the measure of administrative greatness so to devise institutions that they not only satisfy the immediate need which called them into being, but are able, within the context of succeeding ages, to express the ideal on which they are founded. The College of Physicians of London has been such an institution.

The immediate need which faced Linacre and his contemporaries was that arising from the unregulated practice of medicine. The prudence of combining for self-protection must have been evident to all genuine physicians. Before their eyes were numerous examples of trade guilds that had repeatedly demonstrated their ability to act effectively for

their own ends. The question we must ask is, what prevented Linacre's College from becoming simply an organization for the protection of professional interests? What was it that ensured that, through the centuries, his College remained a living and operative force in medicine and did not degenerate either into a picturesque formality or a mere sectional instrument? It was, I believe, that the promoters of this College realized that its survival as an effective influence depended in the last analysis, not merely on the technical competence of its members, not only on their high standard of professional ethics, but also on the intellectual distinction of its fellowship. In the quaint words of its charter, the requirements from its members are, in this order: that they shall be "profound, sad and discrete, groundedly learned, and deeply studied in physic."

It is here, I think, that we see the gleam of an enlightened imagination; and it is not improbable to attribute this to Linacre or to see whence he derived his enlightenment.

At the most formative period of his life Linacre had studied in the centres of Italian learning where the new thought was breaking into light. There he had seen associations of scholars devoting themselves to the advancement of knowledge, not in the narrow and specialized sense of the old mediaeval schools, but with a wide-ranging interest which took all knowledge for the province, if not of the individual, at least of the fraternity. Coming from a country which had scarcely begun to emerge from the restrictive discipline of the old schools, he cannot have failed to have been impressed by the surge of intellectual power arising from this new catholicity of interest, a power which drew its illumination from every relevant source. There he must have felt, even if he did not clearly comprehend, that in the new age now dawning authority was not enough; that for an institution to maintain leadership in any profession it must achieve and preserve intellectual pre-eminence; and that to do this it must ensure broad learning in its fellows and be comprehensive in its fellowship. Is it too much to suggest that when Linacre came to devise the organization of his own profession he should have sought to incorporate within it those features that were giving life and power to the institutions whose inspiration he had witnessed?

How was this realized?

To be "Groundedly Learned"

Of the three attributes required from the members of the new College, two—that requiring professional competence and that enjoying conformity with professional standards of conduct—were self-evident requirements in any association of skilled men. Every trade guild laid down similar conditions. But among professional associations the third was new. The fellows of Linacre's College were to be not only of good professional conduct, not only deeply studied in physic, but also groundedly learned. Precisely what was in mind? This is revealed by the terms of the Linacre lectureships and confirmed by the dispute which took place between his College and the University of Oxford some years after his death. The lectureships provide not for general cultural studies, as one might have expected in the foundations of such a humanist, but for the exposition of those medical texts which, to Linacre, were the basis of professional knowledge. We should find their counterpart to-day in the study of the natural sciences related to medicine. The dispute with Oxford showed that the importance of the founder's concern for basic learning had been fully appreciated. Its outcome was that the College, with the help of Cardinal Pole, was able to insist on that university adopting statutes which provided that candidates should first graduate in arts, but—and this is the significant point—that their studies in arts should be, not undirected, but in subjects relevant to their future profession. They should be "groundedly learned."

This was the essential decision which ensured that the standards of Linacre's College were to be those of the academy, not of the commercial guild.

But it would have been impossible for Linacre, or any of his contemporaries, to have foreseen the importance which circumstances would give to this decision. More than three centuries were to pass before, with the foundation of the University of London, the English universities became an effective influence in medicine. Throughout the whole of this period the intellectual standards of medicine were in the custody of Linacre's College and similar bodies which had taken it as their prototype. On their understanding and encouragement the development of medical knowledge depended. Had they interpreted their responsibilities in any narrow professional sense, the course of medicine in this country would have been very different and they themselves would long ago have become inconsiderable. As it was, by including within their fellowship the widest representation of medical knowledge they preserved themselves from a sterile and narrow professionalism and the body of English medicine from disintegration.

The first fruits of this enlightened policy were not long in appearing. One has only to look at the role of the Royal College of Physicians for the first hundred and fifty years of its existence to see that this body comprehended the scientific intellectual power of this country. Not only those who concentrated on the clinical aspect of medicine, like the great Sydenham, but others who extended the foundations of physic—Harvey into physiology; Wotton and Collins in natural history; Glisson, Wharton, and Willis in anatomy; Gilbert in experimental physics; and many in even further fields—were all members of the same fellowship. In such a fraternity the future became possible; in such a fraternity all could repose trust.

A Recurrent Situation

I have dealt at some length with Linacre and his work because I believe that the situation which faced him is recurrent in the life of learned professions.

Professions arise in response to the recognition of a social need, and their continued existence is dependent on their success in satisfying the expectations raised by the state of the knowledge which they profess. In periods when progress is slow or confined to the consolidation of previous advances, the professional organization which provides for its integration, and focuses its social application, is under no strain and its adequacy is questioned neither by its members nor by society. But from time to time, under the influence of a new outlook, great surges of activity sweep the field. New knowledge accrues at a rate and in a variety which threatens to exceed the capacity of traditional organizations, and new intellectual relationships are revealed which cut across the accepted divisions of professional activity. That was the situation which faced Linacre and his contemporaries. To meet immediate needs reorganization of the professional structure was essential; to realize the promise of the future the unity of the professions had to be ensured and the integration of professional knowledge maintained. It was the measure of the greatness of Linacre and his contemporaries that both problems were solved: the former by creating a type of professional institution which made the new knowledge available to society; the latter by promoting a concept of professional learning which prevented disintegration into narrow and exclusive specialties.

A similar situation faces us to-day. Over the last hundred years the application of the philosophy of science to medical and biological phenomena has unleashed powers which could no longer be deployed within the old organization of medical services and has led to the accumulation of new knowledge in such profusion and variety as to threaten the intellectual unity of medicine. In this country we have attempted to meet the organizational problem by creating a National Health Service; but, as yet, our attempts to deal with the intellectual problem and its implications are no more than tentative. It is to this latter that I would especially draw your attention, for it is on our success in

solving this that the continued progress of medical knowledge and the state of medicine in this country ultimately depends.

If one asks a variety of medical men what, in their opinion, are the disturbing tendencies in medicine to-day, one will receive a variety of answers, but, in general, they will all reflect an awareness of the same underlying tendency. One will complain of the impossibility of keeping abreast of the flood of new medical knowledge. Another will deprecate the tendency to narrow specialization. A third will complain of the increasing divorce between practice and research. Yet another will deplore the invasion of medicine by non-medical experts from the natural sciences; a fifth the shrinking number of medically qualified men in the preclinical fields. These apprehensions are all manifestations of the same need—the need to find a concept which will enable us to organize the different branches of medical knowledge so as to preserve the intellectual unity of the whole.

A Natural Phenomenon

The present situation has arisen because medical knowledge has grown to such an extent that it is no longer, and never again will be, within the capacity of any individual man to master more than a small fraction of it. Specialization has become a necessity. To decry this is not only to ignore facts; it is to deny the very means that have made our recent progress possible. Specialization is a natural phenomenon. It is comparable in human affairs to differentiation of function in biology. We are all aware how, in the course of evolution, the organization of living matter developed from the unicellular to the multicellular stage, how this made differentiation of function between individual cells possible, and how these related developments led to an immeasurable increase in the power of living organisms to deal with their environment. But we are also aware that the differentiated cells of the higher organisms depend, not only for proper fulfilment of their function but for very survival, upon their being integrated into one complete organization. It is the same with human organizations. Specialization holds out to them—be they intellectual or social—the promise of vast extensions in power; but it does so only on condition that integration keeps pace with specialization. As Roger Bacon wrote seven hundred years ago: "All sciences are connected; they lend each other material aid as parts of one great whole. . . . As an eye torn out or a foot cut off, so it is with the different departments of knowledge; none can attain its proper result separately, since all are part of one and the same complete wisdom."

If, therefore, we are to see our way out of our present difficulties we must recognize clearly that the problem arises, not from specialization, but from failure of integration. It is in the organization of knowledge that the weakness in the present structure of medicine lies.

In its essence integration is an intellectual process, and, as such, can occur only within individuals. To a greater or less extent, however, all individuals are affected by the environment in which they find themselves. This is particularly true of creative workers, and, for the majority, the climate of opinion in their surroundings—be this provided by the institutions in which they work, the special activity in which they engage, or the professional or academic organizations with which they are associated—largely determines not only their endeavours but the very possibilities that they can entertain. In the intellectual field, neither the individual nor the environment can be considered alone. Let us examine this interaction as shown in the natural history of a specialization.

The Process of Specialization

Special subjects arise from the general body of medical knowledge when this has reached such a stage that the intensive exploitation of some particular aspect appears possible. The founders of specialties are necessarily men deeply

grounded in their science, and it is both natural and possible for them to draw on their general experience for aid in the advancement of their particular interest. At this early stage all circumstances are propitious. Virgin soil lies on every hand open to cultivation; communication with the general body of knowledge is unrestricted. The successors of these pioneers are, however, not so well placed. Inevitably they will have become more specialized and their links with medical thought as a whole correspondingly less sure. By the third generation these links are becoming tenuous, and by the fourth, the specialty may have become so isolated, intellectually, that its members are, in general, unaware of their plight.

Simultaneously with these developments a parallel series of events will have been in progress. The soil susceptible to exploitation by those ideas and methods which had been initially so successful will have shrunk significantly. Pre-occupation with acquiring the mass of special knowledge that has been gained will increasingly reduce the chances of new methods and new ideas, which might revitalize the subject, being brought in from elsewhere. A tradition, or even a special organization, will have arisen, and this, by inculcating into its members time-honoured techniques and ideas, may perpetuate rather than relieve their isolation.

All this may happen to any special subject, clinical or pre-clinical; and, if effective steps are not taken, the outcome is not difficult to foresee. Either the subject will lapse into sterility, content merely with the formal elaboration of its previous achievements; or its field will come to be apportioned among newer specialties that embody the ideas and techniques which its members failed to appreciate. In either case a setback to the progress of learning will occur, for new specialties are seldom discriminating in respect of old knowledge, and years may pass before that which has been displaced is salvaged and brought back to the service of medicine.

I am far from suggesting that the sequence I have outlined is, as yet, applicable in its entirety to any of the existing branches or specialties of medicine. But, to a greater or a less extent, the weakness leading to this sequence is inherent in all, and unless it is clearly analysed, and effective and far-sighted counter-measures are devised, it will inevitably jeopardize not only their own progress but the unity of medicine itself. The essential threat is intellectual isolation. The remedy, in principle, is clear: to maintain, or in some cases reopen, adequate communications with the general body of medical knowledge. This, however, discloses formidable difficulties.

The commonly accepted meaning of specialization is that of a contraction of interest within a particular branch of medicine. But, as I have said on several previous occasions, there is, in my opinion, a more serious danger in the accepted organization of medical knowledge itself. It is the legacy of an earlier specialization and one that I have ventured to call "stratification." As medicine has developed, knowledge has tended to accumulate in successive layers which correspond roughly to the sequence of studies in the medical curriculum. Within each layer communications and comprehension are relatively good; but between successive layers they may be disquietingly poor. Particularly is this so between the group of studies which are called preclinical and those classified as clinical. Thus the physiologist, although usually well acquainted with the work of other professed physiologists and not insusceptible to that of biochemists and biophysicists, is only too often completely unaware of work and thought in pathology or clinical medicine that is of the utmost concern to his own interests. Equally, the clinician may be quite ignorant of work in other branches and specialties of medicine that is essential to his understanding of the problems with which he is engaged. Integration is required, therefore, not only laterally between those who have specialized within the established branches of medicine, but in depth between the branches themselves. What steps have been taken to deal with this situation?

Integration of Knowledge

It is now widely recognized that the advancement of knowledge in many fields of medicine requires the bringing to bear of several different disciplines. This has led to the formation of teams of investigators comprising experts in several subjects; and, unquestionably, such teams have not infrequently been successful. But they have fallen short of expectation sufficiently often to raise doubts whether this device, in itself, is an answer to the problem; whether the success which has attended it on occasion may not have another explanation. To be effective a research team must be an intellectually integrated unit. There is, however, a limit to the distance over which men of different disciplines can communicate, and a loose confederation of highly specialized experts cannot reasonably be expected to achieve unity of purpose. It is not, therefore, surprising to find that those teams that are successful comprise men—and above all possess a leader—who, while expert in a particular field, are sufficiently skilled in the other disciplines concerned to talk the language and appreciate the outlook of those other experts whose help is required. This is the essential factor making for the success or failure of teamwork; the presence in the team of men whose knowledge is broadly grounded; and it is only in so far as a research team contains such men that it can be an answer to the dangers of specialization.

Recently we have witnessed a particular example of this principle which involved a whole branch of medicine and is now rapidly reaching fruition. Twenty-five years ago the progress of knowledge in human anatomy had come almost to a standstill. Its original task of describing the gross structure of the body had been brought practically to completion, and it seemed, almost, that it was kept in being as a separate study only by the necessities of teaching. Then it rediscovered its purpose—the elucidation of the functional significance of structure—and it imported from its sister subjects the approach and techniques to give this effect. At first it had to acquire specialized personnel, but now it has assimilated these skills into its own discipline, and its personnel, thus equipped, have reintegrated their subject into the development of medicine.

These considerations have brought us back to the crux of the matter. Integration of knowledge occurs within a man, not between men. If medicine is to maintain its unity then it must include among its members, not only the whole range of specialists in its component subjects, but men who, within their own persons, link relevant disciplines. But there are limits to human capability, and one must frankly recognize that we cannot expect such men to be as comprehensive in their knowledge of the several contiguous subjects they integrate as those whose sole concern is with any one. We must be prepared to allow them to contract their interests in that branch of medicine or specialty with which they are primarily concerned in order that they may develop the necessary competence in others. We must, in fact, make provision for further groupings of intellectual relationships.

How are we to do this, and how are we to accommodate such men when produced within the structure of our profession?

The Task for Universities

Medical men and biologists receive their initial training in the universities. With the passage of time, however, the training structure at the undergraduate and immediate postgraduate levels tends to become formalized; although this may be satisfactory for producing competence in well-established subjects, it does not in many cases provide a sufficient foundation for work in newer fields. In general, these are the fields in which two or more disciplines, hitherto regarded as distinct, are coming together. If the universities are to keep pace with advancing knowledge, if they are to equip their graduates for the future, then they must be prepared to allow more elasticity in the planning of courses of study, more discretion to the individual. In this con-

nexion the course in basic medical sciences, now under trial at Harvard, may well repay examination.

But, although much may be done on these lines, the mass of knowledge now necessary for those who aim at entering new fields is such that the need to provide more comprehensive postgraduate study must be faced. In relation to medicine there is one special problem in this respect which is causing concern, not only in this country, but elsewhere. It is the diminishing recruitment of medically qualified men to the non-clinical branches of medicine. I am far from unaware of the many distinguished contributions to medical knowledge that have been made by men without such qualifications; but, when one remembers how fruitfully in the past those studying the normal have drawn upon the knowledge of the abnormal, the prospect that at some future date the preclinical sciences might be devoid of those with such supporting experience understandably causes disquiet. But the ordinary medical course of to-day is so long and so detailed as to deter many who intend to spend their lives in the preclinical field from attempting it. The possibility might well be considered, however, of providing for these an alternative more restricted course which, while not entitling to practise, would open to them those studies in the abnormal which are the counterpart of their own interests.

It is, however, in the clinical field that the problem of ensuring the integration of medical knowledge is most pressing.

The Task for Hospitals

Clinical research, in the strict sense of the investigation of illness in human patients, must necessarily be carried out by men who are themselves competent clinicians. To-day, however, such research may need, in addition to the clinical skills, the ideas and techniques of any of the branches of knowledge related to medicine. Experience during the last fifty years has indicated that those who seek to advance clinical knowledge must usually be, not only fully competent in some branch of clinical medicine, but also expert in the basic subject, or subjects, most relevant to their clinical interest. That is largely true now. It will be even more so in the future.

But let us be quite clear about the level at which we must aim. Clinical knowledge is not going to be advanced by men with a smattering of either clinical medicine or basic science. It is men of authority who are required—authority, not only as clinical consultants, but also in the basic medical science with which they are concerned; men whose opinions command the respect of both their clinical and their preclinical colleagues. Given a few such men in any specialty, its fruitful integration with the general body of medical knowledge would be largely assured. Devise training requirements which will permit the emergence of such men according to the changing needs of developing knowledge, and provide, as a matter of principle, full careers for them within the medical institutions of this country, and a major threat to the progress of medicine will have been removed. There is no shortage of potential recruits, and the difficulties in the way of its realization are largely of our own devising.

At this present time there seems to be a tendency to cast the training requirements for consultants and specialists into such rigid moulds as to discourage the production of any save existing types. In many cases the prescribed experience is so comprehensive and exacting as to leave little or no time for a man to develop any original talents that he may possess. Similarly, there seems to be a far greater reluctance than there was in the past to create consultant or specialist posts for those whose skills do not conform to some established pattern. These tendencies are understandable. The responsibilities of medical practice impose upon us the duty to ensure that those who have charge of patients are competent within their special field. But it is largely within our own hands to define the extent of this field in any particular case. Indeed, in recognizing and creating opportunities for the practice of the existing clinical specialties,

our predecessors have already done this. The future requires that we, in our time, show an equal sensitivity to the needs of medical progress and, by avoiding the imposition upon medicine of a rigidity of training and an inelastic career structure, remain free to take advantage of opportunities and to meet needs as they arise.

These dangers are most evident in those clinical specialties whose practice, as defined at present, requires a high degree of manual skill. Over the last seventy years, antiseptics, asepsis, and anaesthesia have enabled such specialties to conquer a considerable number of their problems. But it is evident that the many which remain, and pose the present challenge, are unlikely to be susceptible to the same approach. Yet in such specialties the systems of training and requirements for staff appointments are predominantly determined by previous achievements, and these militate against the recruitment of those who, by bringing other skills to bear, could help to solve the problems which prevent progress. The incorporation within the specialty of a few men who were allowed to limit the field of their clinical responsibility so that they might acquire the requisite skill in those ideas and techniques of which the subject stands in such need, might go far to solve the present dilemma.

These are no new prescriptions. They are the modern version of the principle on which Linacre founded his College; that our profession should contain men who are not only deeply studied in physic but groundedly learned. Before the first world war these requirements were accepted as in the highest tradition of British medicine, and among the chief ornaments of our profession at that time were clinicians who were also outstanding as pathologists or physiologists or chemists. In recent years, however, overwhelmed with the flood of new knowledge, we have seemed to lose sight of this principle. To our failure in this respect we can primarily attribute the present increasing separation of practice from research, the widening division between the components of medical knowledge and the disappointing progress of many specialties. The most urgent task before medicine to-day is to redress our omission while this is still possible.

There remains one final consideration.

The Essential Endeavour

In the advancement of knowledge, associations of men bringing together a wide variety of talents and experience have played a major part. Here men make contact with other interests and are exposed to a wider perspective which enables them to appreciate the relationships of their own specialized preoccupations to the general body of learning. Here they see excellence and are prompted to emulation. But, above all, it is in such associations that men become conscious of a continuing and underlying community of interest which strengthens each against intellectual isolation and preserves the body of their learning from dissolution. That is the principle underlying the concept of a university. That was the principle underlying Linacre's great design. But to-day, with the increasing extension of the field of medicine and the differentiation which has been allowed to creep into its professional structure, it is a principle that is becoming increasingly difficult to realize.

Yet if medicine is not to disintegrate into a series of isolated specialties and its organization into a collection of bodies representing simply sectional concerns, then its traditional institutions must ensure, as they have done in the past, that they remain the focus of its manifold interests. This they can do only if they succeed in sustaining a sense of common fellowship among the many varieties of men whose services are now necessary to medicine. The essential endeavour of Thomas Linacre and his contemporaries was directed towards realizing this ideal. It remains for us, their successors, to continue in the context of our own times the endeavour that they began; for it is only by the unremitting efforts of its members that a profession can remain within reach of those ideals on which its continued existence as a living and operative force ultimately depends.

ACUTE PERFORATED PEPTIC ULCER FREQUENCY AND INCIDENCE IN THE WEST OF SCOTLAND

BY

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A survey of perforated peptic ulcer in the West of Scotland for the period 1924-43 has already been published (Illingworth, Scott, and Jamieson, 1944; Jamieson, 1947). The present report brings the survey up to date by covering the period 1944-53.

The region surveyed includes the City of Glasgow and the counties of Argyll, Dumbarton, Lanark, and Renfrew. This region is particularly suitable for a survey of the kind, because it carries a community which is large and (as regards emergency surgery) virtually isolated. The population exceeds 2 million, densely congregated towards the centre in Glasgow and the industrial towns of Clydeside. Towards the periphery of the region the population is sparse, and its few cases of perforation are directed towards Glasgow. It follows that the population from which patients are drawn corresponds with the population of the four counties, and can be determined from the decennial census and from the annual estimates of population made by the Registrar-General. Finally, a count of the perforations occurring in this community can be made by searching the hospital records, for the features of perforation are so characteristic and the need for hospital treatment so clamant that few who have perforated can fail to reach hospital.

In comparing present with previous hospital experience account must be taken of the increasing amount of emergency surgery done at the old municipal and local hospitals taken over in 1948 by the State. It is no longer possible to estimate the total perforations in the region from a count of those treated in the large teaching hospitals in Glasgow. Formerly, as we showed in the previous survey, these institutions treated 80% of the perforations in the region, but now the proportion has fallen to 65%. A change of this kind was foreseen, and in the present survey perforations have been counted for each hospital in the region for each year. The total count for 10 years amounts to 6,343 perforations.

The patients counted in the present and previous surveys are limited to those in whom the diagnosis of perforation has been confirmed at laparotomy or necropsy. The standard operative treatment has been by simple closure of the perforation. Gastro-enterostomy has been added 244 times. Primary gastrectomy has been done 26 times.

Frequency and Incidence of Perforation in the Population

The number of perforations treated annually in the region is shown in Fig. 1. It will be seen that over the 30-year period perforation has become increasingly common. The general trend is an almost linear increase from some 200 perforations in 1924 to some 700 in 1953. Apart from the violent disturbance of the uniform trend during the war years, which was discussed in the previous report, the year-to-year fluctuations have been small.

These figures provide a basis for calculating the changing incidence of perforation in a population of known size. According to the Registrar-General's estimates the population has remained almost stable at about 2.1 million, and it follows that the curves shown in Fig. 1 represent incidence