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MEDICINAL TREATMENT: ITS AIMS AND RESULTS*

BY

Sir HENRY H. DALE, O.M., G.B.E., M.D., F.R.C.P., F.R.S.

Gideon Delaune came to this country as Apothecary to King James the First's Queen, Anne of Denmark, and soon appeared as a bold and vigorous protagonist in the movement which led to a decision by the King in Council, in 1610, to promote a Bill in Parliament for the creation of a Company of the Apothecaries, separate from the parent Company of the Grocers, which had till then exercised authority over the trade in drugs and medicinal substances as well as over that in the spices and comestibles which we still regard as the proper concern of the grocer. The Grocers' Company was apparently in a position to snub Gideon Delaune, on the ground that, as a foreigner, he was not admissible to the freedom of the City of London or of its Companies. In any case, they were able to exclude him from a meeting of their Court which they called to consider this movement for the secession of their apothecary members, and the Bill proposed for their separate incorporation.

In the event, the prorogation of the Parliament intervened, and prevented this Bill from going any further. When, however, the aggrieved apothecaries took action again in 1614, by the different method of presenting a direct petition to the King for the grant of a Royal Charter, on the analogy of those already granted to the College of Physicians and to the Company of the Barber-Surgeons, the Grocers' Company was unable either to interfere with Delaune's influential access to the King himself, through his attachment to the Queen's household, or—a matter probably of even greater importance for the success of the petition—to prevent his approach to the Law Officers of the Crown, and especially to Sir Francis Bacon. It is suggested that the great Bacon had a rather poor opinion of physicians, and that he was the more ready, on that account, to interest himself in furthering the claim of the apothecaries. That may seem, indeed, to be a strange preference when we remember that Bacon's own physician was no less than William Harvey, who, in due course, was to give the first and still the supreme example of the application, in the field of medicine, of the then new and revolutionary method of advancing all natural knowledge by direct observation and experiment, which had been spreading to this country from the European continent, and the elaboration of which into a new system of philosophy was to be Bacon's own prime interest and greatest achievement. We might have expected, perhaps, to find that this triumphant application by Harvey of principles which Bacon was advocating with such subtlety and

eloquence would have united them in a common enthusiasm. We have no evidence, however, that there was anything more than the professional doctor-patient relation between them, or that Bacon even recognized the tremendous significance of what Harvey was doing. As for Harvey's opinion of Bacon's contribution to the foundation of modern science, Aubrey's gossip report of it suggests a tolerance, somewhat less than respectful, of the practical experimenter for the merely theoretical organizer or exponent—an attitude, it must be admitted, of which examples can be found even to-day.

A New Structure of Medical Knowledge

We must not lose sight, however, of the dates of such events, in relation to those with which we are here more directly concerned. The new Charter of the Apothecaries was ready for acceptance in 1615, though it was not actually signed till 1617. In 1615 Harvey was only just beginning the progressive exposition of his discoveries, in his Lumleian Lectures to the College of Physicians; and it was not till thirteen years later, in 1628, when Bacon had been dead for two years, that he was ready to present all his evidence, and to deploy the full array of his arguments, in the *De Motu Cordis*. It is to the year 1628, therefore, that we must look for the beginning of a new structure of medical knowledge, built upon a new foundation of experimental science; and, even then, this revolutionary change was to proceed but slowly and intermittently during following centuries, so that it had hardly entered upon its present phase of rapid and still accelerating progress until years so recent that some of us who still survive were already adolescent when it began.

In 1615, therefore, there was hardly any reason even to suspect the coming of so great a change. At that date, and indeed for very many years after it, the formal training of a physician still bore signs in plenty of the earlier association of the practice of medicine with the priesthood. If it included any direct observation of the normal functions of the body, or of the effects of diseases in disturbing them, it was only by the rather casual accident of opportunity. The training was based primarily upon a long and intensive indoctrination with ancient writings, reverently accepted as embodying an orthodox code of medical knowledge, especially the writings of Hippocrates and Galen, together with argumentative interpretations of these by mediaeval commentators.

The statutory obligation of the regius professor of physic at one of our ancient universities at that time

*The second Gideon Delaune Lecture, given on May 14, 1957, in commemoration of the founder of the Society of Apothecaries of London.

was to present these medical scriptures, in lectures delivered four times a week, to students obliged to attend them regularly and to listen to them quietly and attentively. There was, indeed, an additional obligation to perform an "anatomy," and to interpret its demonstration by lectures, once every year; but, in a Grace passed by the Cambridge Senate in 1646 to reinforce this provision, we can find the allegation that "for several years, in order to effect some slight saving, no dissections at all have been made in the faculties of medicine and surgery." We should not expect such a training, which seems to have required eleven or twelve years, to predispose Francis Bacon to any special respect for the physician which it produced; while we should not expect to find, in the physician so trained, any eagerness to embrace the new philosophy, which was claiming to check and to replace ancient doctrines with a knowledge won by direct observation and experiment.

We can hardly suppose that Bacon would have had any detailed knowledge of the function of the apothecary; but, from what he knew of it, it might well have appeared to him to be more congenial to his own principles. For, however trivial and even ludicrous, in the light of our present knowledge, we may find the credentials of almost all the drugs and medicaments with which the apothecaries were then called upon to deal, they were at least actual substances, and not vague ideas. The tests by which the apothecaries endeavoured to control their identity and quality, whatever their scientific value, had at least the character of observation and experiment; whereas the physicians were mainly concerned with ancient speculations, using their ingenuity to interpret diseases and their symptoms in terms of the all-pervasive doctrine of the four bodily humours, and to attribute remedial activities to various drugs and therapeutic procedures, in terms of the same fantastic but reverently accepted dogma.

The Physicians' Attitude

It must not be supposed, however, that the physicians and their College were, at that stage, opponents in principle of the claim of the apothecaries to be separated from the grocers. In that dispute they were prepared to side with the apothecaries, provided that the latter would accept, with their proposed Charter, a set of by-laws drafted in agreement with the physicians. These were to give the apothecaries, on the one hand, an exclusive right to compound, prepare, sell, and distribute the remedies included in the "London Antidotary"—a sort of pharmacopoeia to be compiled by the College of Physicians; but, on the other hand, they were to forbid the apothecary to "visit any sick person for the sake of giving advice," or to "administer medicine except in urgent necessity and imminent danger to life, when no physician can be found." If these by-laws, which were accepted by both parties, had indeed been strictly interpreted and made fully effective, it seems obvious that the function of the apothecaries should have developed into one not greatly different from that which, in years much more recent, came to be recognized as proper to that of the duly qualified dispensing pharmacist.

It would, however, be widely outside the scope of my intention in this lecture to make any attempt to follow the further course of events through which this Society became, in due time, the sponsor of the general practitioner of medicine, and the authority first responsible for testing the qualifications of that key contributor to the effective structure of medical practice in this country. This central achievement of the Society, in its now long history of 340 years, had a prominent place in the fine lecture, forming the first of this series, delivered here a year ago by my dis-

tinguished friend and predecessor in the lectureship, Sir Zachary Cope. Sir Zachary made due acknowledgment of the advantage which he had enjoyed in preparing his lecture through the kindness of Dr. Charles Cameron, who had allowed him the privilege of studying, in page-proof, the new history of this Society which Dr. Cameron had completed in typescript, and had even believed that the corrected page-proof of it was ready to be passed for publication, several years ago. I have myself had a similar privilege through Dr. Cameron's kindness, and have made free use of it, especially in that section of my lecture already given.

If I may here be allowed a slight digression from my own proper subject, I feel that I owe the Society an explanation and apology in this connexion. When Sir Hugh Lett was Master of this Society he appealed to me, as Chairman of the Wellcome Trustees, for financial support for the eventual publication of such a new history of the Society. Sir Hugh handed to me the large typescript draft which had been prepared by the late Dr. Cecil Wall, and which embodied copies of a number of Charters and other historical documents in the Society's archives, of which Dr. Wall had for many years been a devoted student. I think that Sir Hugh believed that, with a moderate amount of editing, the typescript left by Dr. Wall could itself be made suitable for the proposed publication; and the Wellcome Trustees, when I put the matter to them, were willing to provide the necessary financial guarantee. When the material was examined, however, with the aid of the best advice available, it became evident that Dr. Wall's draft had not yet reduced the material which he had collected to anything like the compass or the form which would enable it to be made suitable for publication by any merely formal editing. In the hands of a suitably qualified author, however, it would provide an excellent basis for a new history of moderate dimensions; and I was pleased to find that my friend Dr. Cameron was willing to accept a modest commission to undertake what was not expected to require a great deal of work. Using Dr. Wall's draft, Dr. Cameron was soon able, in fact, to produce what will surely be accepted by the Society, and by readers in general, as an attractive and a most informative account of our history. It would not then have occurred to me, any more than it did to Dr. Cameron, to suspect that the extensive transcripts from documents in the archives which Dr. Wall had included in the material which he left, and which Dr. Cameron had conveniently collected in appendices to his book, could not be accepted as textually exact. Dr. Ashworth Underwood, however, had meanwhile made the advantageous proposal that this new history of the Society should be included in the Publications of the Wellcome Historical Medical Museum; and when the proofs fell into his hands and those of his staff, and the transcripts began to be compared, word by word, letter by letter, with the original documents, they were found to be so full of transcriber's errors that the process of correction is even yet not quite complete. I can only offer to the members and friends of the Society the assurance that when we get what ought to be a definitive history of the Society we shall not only enjoy the reading of the text but shall be able to refer to the supporting documents without fear of criticism from the most exacting historian.

Apothecaries' Original Functions

It is not my purpose, however, to deal further with the general history of this Society, or with the long-drawn-out struggle with the physicians, which eventually won for the licentiates of the apothecaries the function and status of the general practitioners of medicine, instead of that only of the preparers and purveyors of drugs. Sir Zachary Cope gave a brilliant survey of that general history in his lecture last year; and I propose to draw attention, more particularly, to some features in the more general history of the medicinal treatment of diseases, in relation to which the *original* function of the apothecaries was the control, supply, and administration of the remedies which the physicians prescribed.

I think that we should remember what a very large part must have been played in medical practice, at the time when this Society obtained its Charter of incorporation and long afterwards, by the prescription of medicinal treatment and the corresponding supply, with a recognized guarantee of identity and quality, of the remedies which had been ordered. No methods of diagnosis could then have existed, except in the crudest and most superficial sense of recognizing, for example, the presence of a pox or a dropsy; for there was

as yet no real physiology or pathology on which anything better could be based. The physician, and doubtless the apothecary also, as soon as he strayed outside the by-laws which were supposed to restrict his function, could no doubt, then as now, give useful service to his patient by common-sense advice about the regulation of his bodily habits; but morbid symptoms of any kind would inevitably be referred to excess, or defect, or some other kind of perversion, of one or another of the four postulated humours. The first impulse would naturally be to remove the peccant material, either medicinally, by a vomit, a purge, or a clyster, all of a drastic character, or surgically, by bleeding or cupping, or by issues and setons; all available to be tried in turn, of course, or often in combination. These drastic methods had a very long currency; and I think that it was the late Professor A. J. Clark who first pointed out that the doctrine of homoeopathy, which began to be promulgated by Hahnemann in 1810, must even then have had the comparative advantage that, with the almost inconceivably minute dosage which its author eventually advocated, it could, at the worst, do the patient no positive injury.*

Seventeenth-century *Materia Medica*

Apart, however, from these more drastic remedies and procedures, used with the object of draining off deleterious humours in one way or another, the therapeutic repertory of the physician and the apothecary of the seventeenth century contained an astounding array of *materia medica*. A large proportion of these were of vegetable origin, their natures and supposed remedial values being set forth in a number of well-known and elaborate herbals. Some of the more fantastic and repulsive, however, were of animal origin, such as the "bezoar stone" (a concretion found in the intestines of certain wild ruminants), "crab's eyes" (apparently not the visual organs of marine crabs, but internal concretions, found on either side of the stomach of the freshwater crayfish), as well as vipers, millipedes (prepared by drowning them in white wine), sheep's trittles (dung pellets), and so forth. Lastly, there were certain metals and mineral salts, for which it could at least be claimed that several were powerfully active poisons. It would be difficult, of course, to discover any intelligible theory to account for the supposed therapeutic properties of most of this impressive collection of reputed remedies. They must have been given largely on a trial-and-error system; and, of course, if the patient's symptoms showed improvement, or recovery began, the result would naturally, and without hesitation, be ascribed to the treatment.

The case-books of the day must have been full of the records of such treatments, and of facile deductions from their apparent results. I may quote one from Dr. Poynter and Mr. Bishop's scholarly edition of the case-book of Dr. John Symcotts, a seventeenth-century physician practising in Huntingdon, who had Oliver Cromwell among his patients. In February of 1647 he records the case of a certain Mistress Baldwin who, according to his account of her symptoms, would appear to have been suffering from biliary colic with jaundice. After purging and bleeding her, and administering a clyster of tobacco, he proceeds to apply a more gentle and continuous treatment. "All this while," he writes, "I gave her every morning a draught of worm-wood, white wine wherein sheep's trittles were infused, with a pretty quantity of egg-shells powdered." Later again, "To all this, and the sheep's trittle drink as before, with a dram at least of the powder following; egg-shells powdered one-half, of millipedes (drowned in white wine or aqua vitae and dried) and Gascoyne's powder each half so much—I ascribe the perfecting of the cure, for this brought away abundance of gravel and a good plenty of urine, whereby (thanks be to the God of Heaven) the pains and jaundice were both

eradicated." There seems to be something like a *non sequitur* here with regard to the jaundice, and it is hardly surprising to read that the patient soon relapsed. Then, after further cuppings and clyster, the poor lady is returned to her former routine, with "two spoonfuls of fresh juice of horse dung" added to her daily morning draught; "wherein," records the good doctor, "I respected the colical wind rather than the icterical effect."

Prescriptions such as some of these may perhaps have been specially characteristic of the practice of a physician in the provinces, where, in those days of slow and difficult communication, it would be natural to have recourse to remedial substances which happened to be locally available. He would be ready, for similar reasons, to borrow both *materia medica* and therapeutic methods from those handed down by tradition to the chatelaines of country houses, or their servants. The same Dr. Symcotts records, for example, a case, in a lady patient, of nose-bleeding—a rather frequent trouble, apparently, in his practice—which had resisted all attempts to stop it until "the cooke-mayd boldly took a cloth wet in cold water and made her sitt upon it." Concerning which expedient the doctor's note comments, as a memorandum, we may suppose, for his own future treatment of this emergency, that "vinegar it may be had been better."

Traditional Nostrums

We should not, I think, be too critical of this readiness to give a professional authority to such homely procedures, however ridiculous most of them may appear. We may remind ourselves that the use of what is still one of the most important of all the symptomatic remedies available to medicine, digitalis, was discovered in the latter part of the following century (1775) by William Withering, as the essential constituent of a cure for the dropsy, which, as he records, "had long been kept secret by an old woman in Shropshire, who had sometimes made cures after the more regular practitioners had failed." And it may be noted that some of the more complicated and expensive remedial mixtures, such as the fabulous mithridate, were also in occasional use in a provincial practice, as well as in that of the London physicians. The mithridate, of the formula which was official when this Society was still in its precarious youth, had evidently acquired a great reputation as a protection against what was then the standing menace of the bubonic plague. Dr. Symcotts records that his important patient, Mr. Oliver Cromwell, "taking abundance of Mithridate to avoid the infection of the plague, cured his pimpled face," and adds a reference to a lady patient in whom its regular use had a similar welcome result.

Mithridate was perhaps the extreme example of a number of these complicated mixtures, often of rare and correspondingly costly ingredients, handed down with innumerable variations over centuries of tradition, with nothing but the cruder kinds of superstition to support their claims to any therapeutic value, but still apparently retaining the confidence of doctors, apothecaries, and patients alike, even long after the period which we are considering. Mithridate was said to have owed its origin, as well as its name, to Mithridates, King of Pontus in the first century B.C. He was supposed to have included in it minute subtoxic doses of poisons of every kind known to him, to protect himself against their actions. (I find it difficult to decide whether the system thus attributed to Mithridates should be regarded as an early adumbration of homoeopathy or of immunology.) In some of its formulae mithridate is said to have required over one hundred ingredients. It was one of the important responsibilities which the early apothecaries shared with the physicians, to supervise its preparation, together with that of other complicated and traditional mixtures, known as *diascordium* and *theriaca*.

It is recorded that in 1625 an outbreak of the plague in London caused such a demand for these complex nostrums that some of the normally required ingredients became unobtainable; so that it was necessary to obtain from the physicians a special concession, allowing cinnamon to be

*According to Professor Clark's calculation, Hahnemann's indication for the effective dilution of one of his tinctures would have produced a solution containing not more than one molecule of the drug in a sphere of fluid of which the circumference would have been equal to the orbit of the planet Neptune.

substituted for *Cassia lignea*. There was another reputed "epidemiological antidote," called the "confectio alkermes," the constituents of which, pearl, ambergris, and lapis lazuli, we might suppose to have been chosen expressly for their costliness; and, not unnaturally, the apothecaries found themselves involved in action to prevent the sale of a cheaper counterfeit. There was even stronger reason for them to be watchful of the authenticity of the bezoar stones which were offered; for these, without any imaginable reason, were so highly prized for general antidotal efficacy that the most authentic and potent, obtained from the intestine of a Persian wild goat, would fetch as much as £5 per ounce! And £5 in those days had, of course, several times the purchasing value of even the now almost legendary £5 of the years before the first world war.

Difficult as we may now find it to discover, or even to imagine, any reasonable basis for a belief in the remedial value of such things, it was certainly as sincere and effective as the beliefs in many other superstitions of those days; and it was even more tenacious than some of these. We do not have to go back to the earlier years of the seventeenth-century for evidence of it. Official recognition continued to be given to the merits of a number of these products of a credulous tradition well into the eighteenth century's "age of reason," and even in some cases long after it. The bezoar stone was included in the *London Pharmacopoeia* till 1746, while mithridate and theriaca were retained in the same authoritative compendium till 1788; and even in the latter half of the nineteenth century, when the parents of some of us were already beginning to be frightened by the dangerously rapid progress of scientific knowledge and theory, the *French Pharmacopoeia* of 1866 still included a theriaca, with no fewer than 57 ingredients, and vipers still among them!

Awakening Scepticism

There were signs already, however, fairly early in the eighteenth century that a certain measure of healthy scepticism in such matters was beginning to affect the attitude of some members of the medical intelligentsia. In Dr. William Macmichael's fanciful autobiography of *The Gold-headed Cane*, first published in 1827, you will find a long account—purely imaginative, of course—of a conversation between the learned Dr. Richard Mead and his friends, held in his great library. From internal indications we are supposed to accept this as having taken place about 1727, a century before Macmichael's book appeared. Dr. Freind is represented as having commented, as well he might, on the remarkable advances made by physiology in the half-century between 1620 and 1670, which included, of course, Harvey's publication of *De Motu Cordis* in 1628, his *De Generatione Animalium* in 1651, and the first decade of the Royal Society of London, founded in 1660, three years after Harvey died. *The Gold-headed Cane* proceeds to recall the contribution to this discussion of another member of the circle, unidentified except as one who had "devoted himself more particularly to the study of Materia Medica," and who remarks that "it was within the same memorable period that some of our most efficient drugs were either first made known to the world, or first introduced into general use." "It will be sufficient," he continues, "to mention bark, ipecacuanha, mercury and antimony; to which four remedies, if we add opium, it may be questioned whether we should not possess a tolerably complete Materia Medica."

We cannot, of course, accept the quotation as having historical authenticity. I find it very remarkable, however, that even Dr. Macmichael himself, writing a century after this imaginary symposium, should have been ready to entertain such a therapeutic heresy, quite apart from the fact that this story imputes it, with evident approval, to a predecessor in the 1720's. For it vividly recalls to me many very similar statements, which I was accustomed to hear as recently as 50 or even fewer years ago, from critical pharmacologists, and even from some of the more sceptically minded physicians of those days. Such men were eager to jettison almost the whole of the traditional empiricism

and irrational polypharmacy still surviving then, and still widely prevalent then among physicians of a less critical habit of mind, who required no sanction for the continued prescription of a particular drug or mixture beyond a vague impression that they had "seen it do good."

If the data were available, however, for a historical survey of the growth of this rationalist movement in medicinal therapeutics, I think that we should find that Dr. Macmichael was not so far wrong in producing an imaginary example of it from the earlier years of the eighteenth century. For we have definite evidence of it, of which *The Gold-headed Cane* also takes note in due course, in the Essay on Mithridatium and Theriaca by the elder Dr. William Heberden, one of the greatest of clinical observers, and therewith a sceptical critic of most of the therapeutics current in his own day. This was published in 1745, when Heberden was still lecturing on materia medica at Cambridge, and before he moved to practise in London; and it was so vigorously destructive of the previously unchallenged reputation of these two famous nostrums that it was to lead to their eventual disappearance, as already mentioned, from the *London Pharmacopoeia* of 1788, though they survived much longer elsewhere.

I feel sure, if it were indeed practicable to obtain an authoritative history of therapeutic opinion, that we should find, indeed, that during the eighteenth and nineteenth centuries there had been a number of such partial and tentative approaches to a generally more rational attitude, but that progress in that direction had been at best very slow, and intermittent as well. This slow development is certainly not to be attributed wholly to a blind and conservative clinging to outworn dogmas. We must recognize that, however strong and general might have been a desire for a rationally based therapeutic practice, derived, as Harvey would have said, "not from books, but from dissections," or, as we might amend the phrase for our present purpose, "from experimentally established data," the physiological and pathological knowledge required to provide such a basis did not really begin to become available till the later decades of the nineteenth century. We could claim, indeed, for its final ten years, the 1890's, a very special share in the inauguration of the new therapeutic era, the ever more rapid development of which we are now watching with an excitement verging perhaps on bewilderment.

A Decade of Therapeutic Enterprise

On earlier occasions than this I have already drawn attention to the occurrence, by a curious chance as it may seem, in a single year of that decade, the year 1891, of the discovery and introduction of three new and different kinds of medicinal treatment, each of them rationally based on a special body of experimental evidence, and each of them providing a starting-point for the eventual development of a whole new range of therapeutic enterprise. There was the first treatment in that year of a disease due to a deficiency—the treatment of myxoedema by direct replacement with a thyroid extract, opening the way for all subsequent developments in endocrinal therapy; there was the discovery in 1891 of the antitoxins, giving a new and rapidly effective impetus to immunological treatment, both therapeutic and prophylactic; and there was Ehrlich's early trial, years in advance of its further development, of a new principle in the treatment of infections—a "chemotherapy," aiming at the direct elimination of infecting organisms by specific artificial remedies—when he treated, also in 1891, a few cases of malaria with methylene blue.

The 1890's, as a whole, appear indeed to have been years of intellectual ferment and unorthodox enterprise, in more than one direction; and more than an itch for alliteration, I think, was required to nickname them "the naughty 'nineties." Scientifically they were characterized by a breaking through long-accepted boundaries, and into new territory. The atom, indivisible till then, as its name implied, began to disintegrate with the discovery of the x rays and the rays from uranium. On the biological side this decade saw the

recognition of the viruses, and the discovery, made by Ross with Manson's encouragement, of the mosquito-transmission of malaria; while physiology was stirring in several new directions, to find surprising activities in extracts from the suprarenal capsules and the pituitary body, to unravel the intricacies of distribution and function in the autonomic nerves, and to recognize the neuronal structure of the whole nervous system. Biochemistry, with all its immense potentialities, was just beginning to assert itself as a separate discipline; and perhaps we should note that, before the century ended, organic chemistry had made a significant step towards a now familiar order of synthetic products, with credentials based on experimental physiology, when it introduced aspirin in 1899. Just after the turn of the century came the first synthesis of a hormone, adrenaline.

Old age, I know, is apt to see the years of its youth through a mist of fallacious memories; and I am prepared for all the discounts which cool reason may demand when, looking back to those closing years of last century, I find the words of a poet coming to mind, in which he recalled an earlier and a different dawn, when "to be young was very heaven."

Of course, I do not suppose that we, who were young then, had any real awareness at the time of what was happening, or any clear vision of what was to come. And I recognize, of course, that any change, dating from that period, in the character of the medicinal therapeutics which is my particular concern in this lecture might be regarded as one of relatively small detail in a great transformation of the whole material and intellectual character of our civilization, as it began to move and expand into its scientific epoch. I do believe, however, that, even in comparison with the remarkable technical advances which the developments in the basic sciences have made possible also in the methods of diagnosis, in functional pathology, and in fact in all departments of medical activity, the medicinal treatment of disease has been the subject of a yet more sudden and a more fundamental transformation since the turn of the century, in that it has undergone a change even in its aims, in the kind of warrant which it demands, and in the kind of results which it expects.

Closing of a Therapeutic Era

We have seen that there had been a long, slow, and intermittent growth of a rational scepticism concerning the claims of most of that therapeutic heritage from mediaeval credulity and superstition with which this Society began its activities. Yet, although before the end of the nineteenth century so much had been eliminated that was fantastic, disgusting, or, at best, useless, there had till then been very few more rationally based remedies to take its place. Some of these, such as cinchona and ipecac, which as we have seen, more critical observers even early in the eighteenth century were reputed to have chosen as examples of drugs having genuine remedial values, had been kept in use indeed; but their specific reputations had been clouded by vague and irrational applications, in spite of the chemical identification of their specific alkaloids. In countries where malaria had disappeared, quinine had been left with a reputation as a general antipyretic, or even as a tonic, presumably on account of its bitter taste; while ipecacuanha had not only become a recognized expectorant, but was widely used in the tropics for the treatment of undifferentiated dysenteries, after the removal of the emetic alkaloids, later recognized as the source of its one specific, anti-amoebic activity. And it is not, indeed, until the close of last century, or even until the present one was getting well into its stride, that we can recognize the real ending of a therapeutic era which had been characterized by a sterile scepticism on the one hand, and a complacent, empirical unreason on the other, and can welcome the dawning of a new era, of a rational medication worthy of scientific confidence.

Mention has been made of thyroid gland and the diphtheria and tetanus antitoxins, as pioneer examples of

remedies and prophylactics of the new species, dealing directly with causes. Ehrlich's new chemotherapy had yet to wait till the end of the present century's first decade before it could register its first major therapeutic triumph, with salvarsan; and yet another had to pass, and the first world war to come and go, before the vitamins could claim a comparable success with rickets, and insulin with diabetes mellitus—diseases due to a dietary and a hormonal deficiency, both of them widely prevalent and tragic in their consequences, and till then without any accepted means of effective prevention or treatment.

Accelerating Progress

From that point onwards, the story has, of course, been one of an accelerating progress into this new era of medicinal treatment, with therapeutic applications following ever more closely upon the heels of experimental physiology, pathology, and pharmacology. If we look back to the early years of the century, the contrast between what had then seemed impossible, and what has now become commonplace, gives ground, not yet indeed for complacency, but already, in the light of what has been achieved, for an expectation, to which no real limits can properly be assigned, of what may yet be to come. The centenary commemoration of the birth of Ronald Ross has lent a special interest to the present position of malaria. This one of the great world-plagues had been early in finding fairly effective specific treatment and prophylaxis, in the use of quinine—a crypto-chemotherapy, one might say, discovered and applied even long before the malarial parasites or the mode of their transmission were known, and, by Ehrlich's own acknowledgment, the point from which his experimental campaign of chemotherapy took its start. And now it seems impossible to resist the conviction that, with the effective insecticides and prophylactics which research has already made available—research which a world war encouraged rather than hindered—this still predominant cause of death and depressed vitality, for a large section of the human race, could be added to the lengthening list of the diseases which have already been banished, if only the requisite money and man-power could be made available.

The list of the infectious diseases, previously with no effective treatment, which have thus been eliminated or mastered by immunology or chemotherapy, especially since the coming of the sulphonamide derivatives and the antibiotics, has grown to such dimensions, and is receiving such frequent additions, that I cannot mention further examples in detail. I can only ask you to make a retrospective comparison between the present position and that at the beginning of this century, when medicinal treatment was essentially helpless—"expectant treatment" was the familiar phrase—in the face of practically all the common acute infections, with the significant and then recently made exception of diphtheria. And as striking a comparison could be made between the therapeutic possibilities, then and now, in dealing with the diseases due to deficiencies.

I should like to call attention to the development, equally impressive and similarly recent, of rationally based remedies which deal with the symptoms rather than with the primary causes of maladies. Here again we find a new situation, in that the development is keeping ever more closely in step with the advance of knowledge in physiology, pathology, and pharmacology, so that the immediate quest is guided by the aim to deal, no longer just empirically, by blind trial and error, with the overt symptoms as such, but rationally with their proximate causes, as these are progressively revealed by research. An example is afforded by the use of some of the hormones, or of their synthetic analogues, in excess of the normal need—not therefore to replace deficiencies, but to relieve symptoms; and perhaps I may allow memories of earlier research interests of my own to prompt me to mention, in the same connexion, the antihistamines, and the agents which block, or potentiate, the transmission of the excitation across ganglionic synapses, or from motor nerve endings to muscle fibres. And these last are playing their

part, together with the progressive and scientific development of the barbiturates and other anaesthetic and analgesic agents, in the recent remarkable advance in the methods of producing anaesthesia, muscular quiescence, and adjustment of the blood pressure, to meet the needs of surgery. It is obvious, I think, that these improvements, all dependent on a scientifically based medicinal therapeutics, together with the now rapidly improving methods of establishing and physiologically controlling an artificial circulation, are playing essential parts in the dramatically successful extensions of surgery to the heart and its great vessels, and to the other thoracic organs.

Conclusion

I have been making a rather hasty survey, in which has been noted the recent, fundamental, and still progressive change from a medicinal therapeutics which still derived its sanction from a largely irrational empiricism to one which endeavours to follow ever more closely, step by step, the likewise recent development of an aetiology based upon experimental science. The association will certainly continue, and no limit can be rationally predicted to what may further be achieved under its guidance. I do not think that we can doubt the magnitude of the benefit which it has already brought, and will continue to bring, to medicine in its service to the needs of humanity. In its practical applications, however, it will inevitably raise, and indeed may be assumed to be raising already, new problems for medical practice which are likely to create a peculiar difficulty for unspecialized, general practice.

Pharmacology will certainly acquire a growing importance in any effective scheme of medical education. I imagine, however, that its educational aim will have to be increasingly directed to general principles of pharmacological action, in relation to a scientifically warranted therapeutics. For it is hardly to be expected that pharmacopoeias, textbooks, or even annually revised lectures, will continue to keep pace with *material medica* subject to continual innovation and replacement, dependent for sources of supply, and, to a large and growing extent, for the researches producing the new remedial agents, on large-scale pharmaceutical industry. To enable the optimum benefit for the patient to be obtained from such new therapeutic resources the practitioner will surely need to have a continuing access to some expert and completely independent source of information and advice, on the relative merits and disadvantages of the remedies presented for his choice in so embarrassing and bewildering an abundance, as well as access to the means for a scientific control of the application of many of them. It is one among the needs which we might surely expect a national health authority to be considering, if it were indeed concerned, not merely to settle the terms on which a medical service of some kind can be provided, but to ensure the continuous and progressive improvement of that service, in step with the relevant advances of scientific knowledge and methods, as these become available for its use.

When the All-India Institute of Mental Health was inaugurated at Bangalore in 1954, the Health Minister, RAJKUMARI AMRIT KAUR, emphasized the inadequate facilities for treating mental patients in India. Training facilities, too, were equally poor. The object of the Institute is to train psychiatrists, nurses, and other staff for mental hospitals and to conduct research into problems of mental health and disease. It also intends to conduct surveys in selected urban and rural areas on the incidence of mental abnormality and the biological factors that accompany mental illness. The Institute is divided up into fifteen departments; these include departments of clinical psychiatry, social psychiatry, neurology, radiology, and statistics. In addition to a number of distinguished Indian medical men on the staff, the Institute has, as medical consultant, Dr. W. Mayer-Gross, of Great Britain. Its handbook, recently published, gives details of the courses of study available to postgraduate students.

SUDDEN LOSS OF MEMORY

BY

ALEXANDER KENNEDY, M.D., F.R.C.P.
F.B.Ps.S.

*Professor of Psychological Medicine, University of
Edinburgh*

AND

JOSEPH NEVILLE, M.B., M.R.C.P., D.P.M.
D.C.H.

*Senior Registrar, Joint Department of Psychological
Medicine, Royal Victoria Infirmary and King's College,
Newcastle upon Tyne*

The individual who is found wandering or who presents himself at a police station unaware of his identity, his past history, or his whereabouts is a familiar figure in the lay mind which has been reinforced by his frequent appearance in fiction and on the screen. Sudden amnesia is well known in a variety of contexts as occurring after accidents involving head injury, after epileptic fits, in boxers who have been knocked out, after alcoholic intoxication, after sudden personal disasters or bereavements, after stage displays of hypnotism, in battle-exhausted soldiers, in criminals facing arrest, in absconding treasurers and reluctant bridegrooms. Further, it can be induced in normal subjects under hypnosis, and has occurred from time to time in almost epidemic form, the report of one case in the press being the signal for the appearance of several apparently sincere imitators.

Although general opinion thus recognizes that the aetiological factors responsible for an apparently identical clinical feature, a period of amnesia, may be either organic or psychogenic, there is scanty reference in the medical literature to this dual approach to the study of pathological forgetting. Owing to the transient nature of the amnesia, a relatively small proportion of those seen at police stations, casualty clearing stations, hospital accident departments, and doctors' surgeries are referred for detailed psychiatric examination or are, in fact, examined before time and circumstance have either led to recovery or greatly modified the clinical picture.

The object of the present study was to examine the aetiological factors in two series of instances (in all, 74 cases) of abrupt failure of memory with or without loss of personal identity, with a view to establishing the relative importance of organic, psychoneurotic, and volitional factors. As the result of this investigation general conclusions have emerged which seem to us to have practical significance for diagnosis and treatment. In this article the attempt is made to extract from the detailed case material the evidence on which these conclusions may be based.

Previous Investigations

Freud (1904) stated that the primary function of amnesia is that of defence against the admission into conscious thought of traumatic elements involved in a neurotic conflict. An entirely dissimilar view was held by Mott (1919), who, basing his conclusions on patients from the first world war, implicated the factor of organic commotio cerebri resulting from shell-shock. Parfitt and Gall (1944), from their experience of Service men who had not been exposed to front-line hazards, described abrupt loss of memory as a hysterical or malingered evasion of the consequences of