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A.D. Waller.**

Contributors

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ON THE
CENTRALISATION OF MEDICAL EDUCATION BY
THE UNIVERSITY OF LONDON.

BY A. D. WALLER, M.D., F.R.S.

MEDICAL education falls naturally into three stages:

1. Preliminary scientific—chemistry, physics, biology.
2. Early medical—anatomy, physiology.
3. Medical proper—medicine, surgery.

There is at present no obvious necessity for centralisation of studies belonging to the third stage—medicine, surgery, pathology, and allied special departments of medicine and surgery, ophthalmology, laryngology, dermatology, obstetric medicine, and surgery, etc. It is tacitly recognised that on any large scale the instruction in these subjects must be essentially practical, given to relatively small groups of pupils in the out-patient and in-patient departments of the several London hospitals. These departments are substantially the laboratories in which practical instruction is given, and the paramount importance of such practical instruction delivered to small groups of pupils is properly recognised by the designation of "clinical" as applied to subjects of the third stage. Pharmacology and pathology are upon a somewhat different footing, and will require particular consideration.

Subjects of the first and of the second stages are those in which, by reason of the considerable burden and waste energy involved in their quasi-complete treatment in twelve different rival centres, a need for concentration has made itself felt.

It is very evident that with twelve disconnected and independent schools, each complete in itself, partly or wholly dependent upon pupils' fees for its income, the resources necessary for "complete efficiency in all subjects" have not been forthcoming, and in any case have in large measure run to waste by reason of multiplication of plant and appliances that would have been better economised if the fees and appliances had been concentrated in fewer than twelve schools.

This evident fact has given rise to a movement in favour of a concentration of resources and of functions, (a) in one centre, (b) in several centres, and both these forms of concentration were urged with reference to (1) the preliminary scientific and (2) the early medical studies. The movement in this direction elicited Statute 80 of the University of London Act, 1898 :

80. With a view to greater efficiency and economy the Senate may make arrangements with the governing bodies of any schools of the University to provide common courses of instruction for matriculated students in such schools in one or more subjects by appointed or recognised teachers, and to enable such schools to interchange their matriculated students for the purpose of instruction, and in particular the Senate shall use its best endeavours whenever practicable to secure such common courses of instruction for internal medical students in the preliminary and intermediate portion of their studies under appointed or recognised teachers at one or more centres.

And in their covering report the Commissioners set forth at length (§ 4) the considerations that have led them to the instruction given to the future Senate in the above statute:

We have come to the conclusion that some kind of concentration is desirable, and we should have preferred to have ourselves framed statutes for at once effecting it. But we found from the representations made to us on behalf of the medical schools that there was not at present any such consensus of opinion in regard to the mode in which concentration should be carried out as would enable us to do so.

The task bequeathed to the Senate by the University Commissioners has been entered upon, and in last resort the character of its decision will depend in great measure upon the opinions of the twelve medical schools whose interests are most immediately concerned, and whose collective opinion forms the opinion of the Faculty of Medicine, which is the immediate expert counsellor of the Senate as regards medical education. It is therefore of the first importance that the question should be carefully studied by the medical schools in its immediate bearing upon their individual interests, and in its more remote bearing upon their collective interests as the London School of Medicine.

PART I.—PRELIMINARY SCIENTIFIC STUDY.

It is agreed on all sides that the present inco-ordinate and therefore wasteful activity of the medical schools as regards the preliminary studies should not be maintained. Twelve medical schools, each complete in itself, affording an adequate curriculum in chemistry, physics, and biology, are no longer possible.

It is urged in many quarters that a similar proposition applies also to the second part of the curriculum—to anatomy and physiology—which are the principal function and reason for existence of the medical schools proper.

The arguments applicable to Part I are somewhat indiscriminately applied to Part II, although it was distinctly recognised by the Commissioners "that the advantages of concentration are greater and the difficulties and disadvantages less in the first than in the second."

It may or may not be the case that after due consideration a common treatment should be found to be applicable to Parts I and II, but in the discussion of any method of concentration each part has to be separately considered.

The subjects of Part I have comparatively lately been taken into the medical schools' curriculum, are comparatively expensive to support, and less effectively administered in medical than in science schools; their chief reason of existence in the purely medical schools is that other medical schools maintain similar establishments, which are regarded rather in the light of decoys to draw entries to each of the twelve competing schools than as important departments of the medical school proper. And if all the medical schools were to agree to relinquish the subjects of Part I, all the medical schools would be satisfied and relieved if these subjects were confined to one or more central institutes, provided such central institutions were not connected with competing medical schools. In the case of Part I the advantages of concentration would be greatest and the disadvantages and difficulties least, provided the concentration were effected in independent centres, and not made to consist in the selection of a few existing medical schools, to the exclusion of the remaining schools.

PART II.—EARLY MEDICAL STUDY.

The conditions are altogether different for the subjects of Part II—*anatomy and physiology*. A medical school without *anatomy and physiology* is no longer a medical school proper, although the hospital of which it formed the educational ante-chamber may continue to be recognised as a technical (clinical) medical institution. No doubt if all the medical schools proper ceased to exist, by closure of their anatomical and physiological laboratories, no individual hospital would be better or worse off than its competitors by reason of a concentration of *anatomy and physiology* at South Kensington or at any other non-competing centre. But medical education in the London University would be placed upon an entirely different and far less efficient basis than the present admittedly imperfect basis of the twelve independent medical schools. The present defects of disconnection and under-concentration would no doubt disappear with the disappearance of the medical schools proper, but the opposite effect of over-concentration felt in Continental capitals, serving a far smaller area than that of London, would become even more pressing and grievous in the University of London. Concentration of *anatomy and physiology* would no sooner have been effected by dis-establishment of the medical schools than a reaction would set in, and we should feel the need of re-establishing new medical schools.

So clearly has it been recognised that concentration of *anatomy and physiology* in one centre must at once lead to a totally unwieldy congestion of practical study, that the one centre scheme for these subjects was no sooner broached than it was supplanted by a scheme for "concentration in three or four centres." One of the tentative schemes that found most favour with the promoters of concentration in 1899, and that doubtless influenced the report of the University Commissioners, provided for the concentration of *anatomy, physiology (and pharmacology)* in "three or four institutes," coupled with a proviso to the effect that not more than 150 new students should be allowed to enter at any one institute in each year. Each of these three or four university institutes was to be fully provided, both as to teachers and equipment,

for research and teaching in all branches of each subject. The localisation of the institutes was to be determined by the Senate. The buildings of existing medical schools were to be rented by the University, their equipment taken over at a valuation, and the interests of the teachers were to be equitably safeguarded.

The patent objection to full concentration in one centre seems to have been the principal cause of this alternative scheme of demi-concentration in three or four centres as just sketched. It was a half-measure suggesting itself to those teachers who, while feeling the need for concentration, felt also the practical impossibility and unwisdom of its thorough application to London. But the practical objections to this half-measure are very great as soon as an attempt is made to consider its establishment and operation. Partial concentration in, let us say, four schools, to the exclusion of the remaining eight schools, is manifestly unjust to the latter, which, whatever rental, valuation, or other "safeguard" they might be disposed to accept, would necessarily lose in value and importance as compared with the schools selected by the Senate as university institutes. Yet if it were clearly demonstrated that such individual hardship would conduce to the public advantage by leading to the ultimate establishment of the early medical studies on a solid and efficient footing, it might be incumbent that this sacrifice of individual schools should be accomplished.

But in common with many other half-measures, partial concentration, without escaping the disadvantages of a more thorough measure, loses its principal advantages. To transfer resources and functions from twelve to three or four participants would no doubt improve the efficiency of the latter, but would certainly not provide the University of London with three or four first-class institutes in each of the three early medical subjects, fully provided, both as to teachers and equipment, for research and teaching in all branches of each subject.

An institute of this character, even if its entry were strictly limited to 150 new students per annum, would suffer from the defect of congestion, and would scarcely satisfy both the elementary practical needs of over 300 students and the all-absorbing interest of research, whether for its own sake or as a part of the higher teaching. Then as regards equipment, while it is perhaps allowable to hope that the University of London may in the not distant future possess one first-class institute in anatomy and in physiology (inclusive of pharmacology), no teacher acquainted with the duties and functions of a first-class institute would dream of expecting the University of London to possess three or four such institutes in each of these sciences. It is evident, however, that the proposers of concentration in three or four institutes have in view, not institutes of learning of the highest grade, but principally high-class teaching institutions, and that the far-reaching influence upon teaching institutions of a single first-class institute of learning has not yet entered into their conception of the interests of medical education in London.

Anatomy and physiology, which together constitute the early or intermediate medical studies, of which the medical schools proper are the present instruments, have to be considered together as one group in any general scheme of concentration; but the differences of condition and establish-

ment as regards each are such that they ought also to be separately considered

Anatomy is the senior subject of every medical school curriculum; it is the course of which the methods and details have become most stereotyped by long custom. The teaching of human anatomy, which is the chief function of a medical school department, proceeds regularly year after year, and dissection, which occupies the principal portion of every student's time, proceeds regularly under the supervision of demonstrators. The machinery of anatomical study works well and smoothly in all the London medical schools; in this subject the present subdivision of pupils into independent groups works well, and concentration of teaching seems to offer but small advantage as compared with the disadvantages of dislocating the present system. There is, it is true, small incentive to research or to comparative morphology in a medical school. But this is hardly felt to be a drawback, the principal value of the subject is practical rather than theoretical. And the greater breadth of view that might possibly be acquired at a central institute appears hardly sufficient reason for an abandonment of the anatomical departments by the medical schools. Greater breadth of view and comparative morphology would be far more likely to be promoted throughout the anatomical system of the whole teaching organism by the establishment of a central institute, independent of elementary cares and at liberty therefore to cultivate the more scientific aspects of anatomical work.

Physiology is of comparatively recent establishment in the medical schools, and it is only during the last twenty-five years that it has been committed to the charge of a professed physiologist, and not to a physician or surgeon of the hospital staff. Its methods and means of teaching are extremely unsettled and variable as regards physiology proper, stereotyped only as regards certain portions (histology, chemical physiology) of which the routine has formed itself. In relation to the medical curriculum, physiology is an applied science and limited to the more fixed and stereotyped portions forming part of the principles of medicine and surgery and of clinical chemistry. But by reason of the changeful and expanding character of all kinds of physiological topics, and of the fact that physiological laboratories are in many cases controlled by specialists whose attention is not confined to the medical aspect of the subject, the scientific interests of physiology find access to school laboratories, and in some cases actual encouragement from the school authorities. In such instances contributions to knowledge and to the higher interests of medical education are made by the laboratories of the medical schools, and if encouraged by the University these contributions would doubtless be greatly augmented.

The difference between the conditions of anatomy and physiology is so great that, in spite of the possible disadvantage of separating the two subjects, it might be thought inexpedient to concentrate anatomy and expedient to concentrate physiology.

Nevertheless, the objections to such separation between the two great divisions of early medical education are of such moment that we should, if possible, preserve their connection either by maintaining both subjects in the twelve medical schools, or by removing both subjects to the university institutes. The non-concentration of anatomy should in-

volve the non-concentration of physiology, or the concentration of physiology should involve the concentration of anatomy.

On the other hand, it may be urged that, if it be decided to concentrate the preliminary sciences of Part I, it will be most appropriate to establish physiology in connection with such sciences in spite of the disadvantages of its disconnection from anatomy in the twelve medical schools.

But this course should not be adopted until the impossibility of uniform treatment has been fully demonstrated.

POSSIBLE MODES OF CONCENTRATION.

On review of the present state of matters we may conclude in terms of the Commissioners' report :

1. That the advantages of concentration are greater and the disadvantages and difficulties less in Part I (physics, chemistry, and biology) than in Part II (anatomy and physiology).
2. That the advantages of concentration are greater and the disadvantages less in physiology than in anatomy ;

and proceed to consider what, if any, scheme of concentration is applicable to the entire group of subjects included in Parts I and II (physics, chemistry, biology, anatomy, and physiology).

We may at once recognise that, although the arguments for and against concentration of Parts I and II should be separately weighed, it is most desirable that any measure of concentration should be applicable to both parts; that, if possible, a line of cleavage should not be made between Parts I and II, nor within Part II between the subjects of anatomy and physiology.

Concentration in one unendowed or scantily endowed central university institute of elementary instruction in Parts I and II, and an undertaking by the medical schools not to provide instruction in the subjects of Parts I and II, may at once be rejected as involving the surrender of much that is good under the present English system of individual enterprise, and the adoption of much that is evil under the Continental system of large State-endowed universities overburdened with elementary teaching which is inefficiently conducted as to its practical departments.

Concentration in three or four unendowed or scantily-endowed university institutes of the elementary instruction of Parts I and II, and an undertaking by eight or nine remaining medical schools not to provide instruction in these subjects is, in somewhat mitigated form, liable to the same defects as concentration in one central institute and possesses in addition defects of its own that have been set forth above.

"CENTRALISATION."

But these two methods of concentration are not the sole alternatives before the University. A third course is open to it, which in contradistinction from full concentration in one centre, and multiple or demi-concentration in three or four centres, may be spoken of as indirect or gradual concentration by method of "centralisation."

And since this third method of concentration has never yet been set forth in any detailed form, it is desirable at this critical juncture that its merits and demerits should receive our careful consideration.

The advocates of gradual concentration by "centralisation" regard as a dangerous experiment the sudden cessation of nine medical schools contemplated by the advocates of concentration of resources and functions in three or four university institutes. They consider that concentration from twelve to fewer active laboratories should take place automatically under a system of effective central control by the University of the laboratories in its twelve medical schools.

The essential points of such a scheme are :—

1. That such central control should be effective and not simply nominal; including appointments made by the University on nominations presented from the schools, fixing of salaries and laboratory budget to be provided by the schools, and instructions from the University to the schools to be based upon reports of University visitors.

It is proposed that such control should be exercised by the Senate acting through the Academic Council (for internal students) on advice and representations from its appropriate Boards of Studies and from the governing bodies of the medical schools of the University.

(2) That the University should, as soon as may be, supplement its purely administrative control of the local laboratories in its medical schools by the establishment of a central institute of first class, fully provided, both as to teachers and equipment, for research and higher education in all branches of each of the principal subjects of the curriculum. It is proposed that the establishment or recognition of central institutes should be determined by the Senate in accordance with its decision as to the relative importance of subjects of learning² and the resources at its disposal.

When once such a central institute shall have been established and endowed as the central active organ of early medical education, it may be expected to exercise great influence upon the quality of work and economy of means of the University system. The local laboratories as heretofore, but with greater method and uniformity, will continue to supply the instruction of medical students whose principal requirement in science is its application to the practice of medicine and surgery. The requisitions of the teacher to his school for apparatus and equipment in "pure" science necessary for the efficiency of his department in a complete medical school will be curbed in some schools, or granted as at present in other schools, where it may be recognised that the outcome of the special aptitude of a given teacher contributes to the good repute of his school.

Under University control the ordinary efficiency of a practical department will depend less upon the energy or begging power of its head than upon the deliberate policy of the University, and the extraordinary contributions of knowledge that a teacher may be capable of yielding will rest upon the more adequate equipment of the central institute rather than upon the less adequate equipment that a given medical school may be able to afford. Still, it is believed that the special scientific interests of a particular teacher will continue to find a useful place of prosecution in the laboratory of his medical school. And it is believed that under such a

system of organisation, entailing a continual commerce of men and of ideas between centre and periphery, a healthy development of medical education may take place in London, not discarding but utilising and increasing the undoubted advantages of tuition by small groups, and further adding to them the no less undoubted advantages of one first-class central institute of science, unclogged by the duties of elementary teaching.

The objections to this scheme, that it may seriously diminish the importance of the best of the present second-rate laboratories, or lead to the actual extinction of the weakest of the third-rate laboratories, are not objections made in the public interests of medical education, but in the private interests of particular institutions. Nevertheless, they are entitled to consideration, inasmuch as particular institutions may be so considerable as to be chief factors in the public interest. As regards the first objection we may confidently anticipate that under the new system the half-starved laboratories of Sharpey and of Bowman will expand in importance, and maintain their relative superiority of status over the remaining laboratories of medical schools, and that the place where Harvey worked will take fresh lease of life in the investigation of living things. As regards the second objection, it is the avowed purpose of every scheme to concentrate, whether suddenly or gradually; and if, under effective University control, some of the weaker schools should find the burden of preliminary scientific and early medical studies too heavy for their resources, and elect to restrict their labours to the clinical field, so much the better towards the strengthening of medical education by the concentration of its first two stages. But if, under effective University control, four, five, six, or more medical schools find it possible to maintain their instruction in Part II, or even in Parts I and II, then again so much the better. Under a properly-organised system of medical education in London, the full requirements of applied science, and of the indispensable pure science that is the parent and corrective of applied science, the area to be supplied will readily bear and require the service of these several peripheral organs, surviving according to their fitness—always under the effective central control of the University of London.

And if in the altered conditions of applied scientific teaching carried on in the laboratories of the medical schools it should happen that the interest of teachers in the physiological department should become attracted to problems more directly concerned with clinical problems, again so much the better. Any tendency of this character which, so far from being counteracted, would more probably be promoted by the communications formed to and from a central institute of pure physiology, would be in what is very generally regarded as a right direction—towards, namely, the greater development of the clinical laboratory, which is the natural kind of physiological laboratory most immediately useful in juxtaposition with a medical school.

There remains one principal, and to many minds fatal, objection to such a scheme of gradual concentration by the method of centralisation.

Funds for the purposes of establishing and endowing a central institute unsupported by pupils' fees are not inexistence.

To this the only answer to be made is that London is a rich city, capable of supplying money for purposes which its wealthy citizens can be brought to recognise, but that no scheme has ever been forced upon its notice that did not contain as an essential provision the self-support of an educational institution by pupils' fees. There are many institutions in London creditably self-supported by the fees of pupils, but there is no single institution of the higher learning filling what to any far-sighted politician is known to be a function of highest national utility in the cultivation of apparently useless knowledge untrammelled by the necessity of providing elementary instruction for a sufficiently remunerative number of elementary pupils. There is not one condensing point in London in the shape of an endowed building that should be the example and object lesson to tempt the imagination of the public-spirited citizen. All the institutions to which his support can be invited rest more or less on the commercial basis of teaching supplied to pupils, and there is in the scheme for concentration of supplies within three or four select institutions little or no departure from this surely most uninviting prospect.

No doubt lack of funds is a serious objection to central institutes not earning their own living by teaching. But funds are not the primary defect, since funds exist; what is needed above all is the clear thought and purpose that will acquire funds, and the clearly-outlined scheme that will appeal to the fundholders. There is no lack of funds, but there is lack of scheme. The five small hospitals alone found £75,000 in a very few years for the extension of their laboratories that was carried out ten years ago.

At the present juncture a sum of £50,000 would be more than sufficient to provide for an efficient central institute that should be the organ of research and of advanced teaching, and the *école normale* by which teaching in the medical schools would be fashioned and co-ordinated.³

NOTES.

¹ "Medical school" means sometimes the entire medical school, and sometimes only that portion of the institution which deals with intermediate subjects (anatomy and physiology). The latter has been referred to above as the "medical school proper."² Physiology, pathology, pharmacology, in first place in order of requirement. ³ The only Continental instance of such an institute known to me is the Institut Solvay at Brussels, of which the cost was £28,000. The authorities of that institution lay the utmost stress upon the presence in the institute of advanced students and the absence of elementary students. On the other hand, in Germany, where anatomical and physiological institutes have charge of elementary students, the need for institutes freed from this care is felt and expressed.

