

FROM THE REPORT
ON THE
JOHNS HOPKINS MEDICAL SCHOOL

The plant of the Johns Hopkins Medical School consists of

- (1) Certain laboratory buildings;
- (2) The Johns Hopkins Hospital.

The LABORATORIES may be briefly characterized as follows:

(1) *The Pathological Building*, which stands on the hospital lot, is a four-story structure, accommodating classes and research in pathology and bacteriology. Its cost was \$62,147.43; the equipment cost \$8,051.44. It is capable of providing for the teaching of 75 students in each of the two subjects. The staff consists of a professor, two associate professors (one for bacteriology, one for pathology), and five teachers of lower rank. Connected with the laboratory is a new and excellent dead house, just erected at a cost of \$10,000. The annual budget is as follows:

Salaries:	
Professor.....	\$5,000
Other instructors.....	6,350
Wages.....	2,064
Appropriation.....	2,500
	2,500
<i>Total</i>	\$15,914

Diagonally across the street is the medical school lot proper, 300x315, on which are located three more laboratory buildings:

(2) *The Anatomical Laboratory*, 60x100, five stories high; original cost, \$63,331.14; cost of equipment, \$15,639.68. Sixty undergraduate students can be accommodated. The staff consists of a professor, two associate professors, and four instructors of lower grade. The budget of the department is as follows:

Salaries:	
Professor.....	\$5,000
Other instructors.....	7,800
Wages.....	2,252
Appropriation.....	1,500
	1,500
<i>Total</i>	\$16,552

(3) *The Physiological Laboratory*, 60x100, five stories high; original cost, \$76,869.44. In this building physiology, phar-

macology, and physiological chemistry—three separate departments—are accommodated, as well as the library and the school offices.

(a) *The physiological department*, with equipment costing \$2,749.26, is capable of accommodating at one time 50-odd students. Its staff consists of one professor, one associate professor, two instructors of lower grade. Its budget is as follows:

Salaries:	
Professor.....	\$5,000
Other instructors.....	3,600
Wages	1,456
Appropriation	1,000
<i>Total</i>	<u>\$11,056</u>

(b) *The pharmacological department*, with equipment costing \$7,326.37, can be made to care for sixty students. Its staff consists of one professor, one associate professor, three instructors of lower grade. Its budget is as follows:

Salaries:	
Professor	\$5,000
Other instructors.....	3,200
Wages.....	700
Appropriation	1,000
<i>Total</i>	<u>\$9,900</u>

(c) *The department of physiological chemistry*, whose equipment cost \$1,311.55, can receive 50 students. Its staff consists of one professor and one associate. Its budget is as follows:

Salaries:	
Professor.....	\$2,500
Other instructor	1,000
Wages.....	572
Appropriation.....	800
<i>Total</i>	<u>\$4,872</u>

(4) *The Hunterian Laboratory*, 36 x 80, two stories high, costing \$15,660.10. This building serves as an animal house for all departments, for undergraduate courses in surgery, and for experimental work, mainly in surgery and experimental pathology. It can accommodate 25 students. Its budget is as follows:

Appropriation	\$600
Wages.....	252
<i>Total</i>	<u>\$852</u>

THE LABORATORY SITUATION

The instructors in the laboratory departments give all their time to teaching and research. The original conception of the institution aimed to strike an equilibrium between teaching and investigation. It was intended that the entire staff should take active part in both. In this way it was hoped that the laboratories would not only contribute to the development of their respective specialties, but that the immediate personal influence of the departmental head would make itself felt in creating a "school" from which teachers and investigators could be drawn who would lead in the rehabilitation and modernization of American medical science and education. The teaching was therefore intended to be individual in character. A high admission standard was provided as a selective agency; close informal contact of teacher and student facilitated the recognition and development of capacity. The head was in complete command of each of the units—teaching and student. How fruitful this method has proved may be judged from the fact that pupils of Professor Welch fill the directorship of the laboratories of the Rockefeller Institute for Medical Research, and professorships of pathology at Harvard, Columbia, Western Reserve, Wisconsin, Washington University, Virginia, Missouri, etc.; those of Professors Mall, Howell, and Abel, have been perhaps equally influential in their several provinces. While, therefore, the heads of these departments have retained their posts, despite repeated efforts to attract them elsewhere, the junior staff has been in constant flow; a steady succession of teachers and investigators has been trained, drafted by other institutions as soon as they were ready for independent responsibility. This state of affairs is ideal. The associate professors and associates in the laboratory departments are thus all of recent date: one associate professor of anatomy began teaching in 1900,* another in 1902, the associate professor of physiology in 1906, the associate professor of pharmacology in 1906,† the associate professor of pathology in 1905.* Equally noteworthy are the small initial outlay and the modest annual appropriations with which these departments have contrived to play so highly important a part in scientific investigation. A continuous,

* Has declined several calls.

† Had previously taught chemistry at the University of Wisconsin (1904-5).

though latterly somewhat diminishing, series of important researches has issued from all of them.

The method of teaching just described continued without modification until the enrolment rose above the number which the school could handle on that basis. During the first few years staff and equipment more than sufficed, so that the early increases in number were readily accommodated. But from 1902 on, the strain has been more and more severe, the annual registration having increased from 257 in that year to 347 in the current year. For the larger classes space and equipment were lacking; the teaching and service staffs have been too small; and while in the early days more students could be taken without correspondingly greater outlay, once the 250 mark was passed, an increase of students meant staff and maintenance expense that more than ate up the additional tuition fees. The laboratories have therefore suffered from poor and inadequate service; despite which the school deficit has grown as the school has increased in size. It was \$4,562.02 in 1902, \$13,019.87 in 1910.

More important still, expansion has brought into question the fundamental characteristics of the teaching method. In the smaller school a professor, continuously engaged in research, knew and was in active relation with every student. With classes approximating one hundred, even though accommodations be correspondingly increased, the professor cannot possibly continue to carry on such individual work. So far as he is concerned, mass or group instruction must take its place; individual teaching must be more and more relegated to assistants; and the greater the number of assistants, the more surely do they come between the professor and the individual student. The school is at this moment, therefore, in a state of educational perplexity. With space, equipment, teaching and service staff, educational methods and scientific ideals adapted to classes not exceeding sixty, it is endeavoring to teach classes approaching one hundred. The resulting inadequacies have been variously met. In pharmacology, it has been decided in no event to imperil research. This involves the forced reduction of the class to the sixty basis, which is accomplished by drawing lots. Almost one-half the class thus fails to get the experimental course; whether those that enter it are most fit, one has no means of knowing. In physiology, the professor has very reluctantly concluded that research rather than instruction must suffer; in consequence of

which advanced workers are excluded and research by the entire staff is largely discontinued during two-thirds of the year. The financial burden increases, as we have seen, with the size of the school; for every student is taught at a loss. But something worse than financial loss is involved; for in the effort to keep loss down, more expensive forms of instruction once possible tend to be discontinued. Larger classes require multiplication of apparatus; unless endowment waxes more rapidly than the student body only the simplest and less expensive forms of apparatus can be provided. The same considerations affect the supply of animals for experimental purposes.

The defects and difficulties thus far touched on are obviously altogether relative; they depend, that is, on the size of the school. If the school is to be organized on the basis of one hundred students per class, more space, more equipment, and larger teaching and service staffs must undoubtedly be provided, the details of which will be presented later in tabulated form (page 24). But as expansion to the present size has taken place without much thought of consequences, it would seem to be advisable, first of all, to consider the question of numbers on its merits.

The following considerations present themselves:

(1) The school is very close to the one hundred student basis. If provision is now made for one hundred students per class, expansion if uncontrolled by design will unquestionably continue. Shortly a similar problem in reference to the then increased numbers will present itself.

(2) The instruction of two hundred students in the first two years cannot be dissociated from the problem of providing clinical instruction of the same quality for them in the last two years. This point will be discussed later.

(3) The larger classes, even if adequately housed, necessarily involve the deliberate and complete acceptance of the changed methods of instruction which have been gradually creeping in. The school was, as I have already said, organized with the intention of bringing eminent and continuously productive teachers into close relation with a picked student body. Now, no professor can come into individual relation with one hundred or more students. We are required, therefore, to decide whether medical science and medical education will in the end be better off if one hundred or more students per class are taught in

groups, largely by assistants, or if sixty are taught as individuals by a professor who continues to investigate rather than mainly to administer a large department. Two important factors must help to decide: (a) the country's need of trained investigators, be they teachers, practitioners or public health officers, has increased, not diminished, in recent years; (b) exclusion from the Johns Hopkins does not now remand a student to a medical education of lower quality—in fact, it will simply assist in building up schools like that at Washington University, operating on precisely the Johns Hopkins plan and ideal.

Limitation or reduction of numbers is not a thing that commends itself readily to the favorable consideration of American educators; it looks on the surface like "going back." There are, however, two different ways of "going back"—namely, quantitatively and qualitatively. If educational institutions were only in greater dread of qualitatively "going back," quantitative restriction would take on quite a different aspect. It may be that we shall hereafter in America be compelled to employ mass methods of teaching in order to get the physicians which the nation requires; though, as each state will probably have one medical school at least—some will doubtless have more—we may be able to produce a sufficient supply of physicians in schools that at any rate are not large; but we shall do well to avoid the large school as long as we can. So far, neither in America nor in Europe is there any such thing as a school that is at once good and big. Excellent men, of course, come out of the schools of Vienna, Munich and Berlin; but the rank and file get inferior training only. The number of men there enjoying first-rate opportunities is small; and it is deliberately kept small. Undoubtedly the waste of ability by reason of the mass methods of instruction employed is very great. Hence the indefinite expansion of our strong medical schools is assuredly not to be desired. But even if ultimately some large schools prove inevitable, then all the more necessary is it that somewhere a few institutions be kept within limits in order that in them intensive work may be done in the prosecution of science and in the training of teachers and scientific workers. It is clear, then, that before adopting any definite measures in reference to the laboratory situation, a deliberate choice of policy ought to be made.

If such deliberation results in favor of a small school, the proposed reduction in numbers could be brought about by some-

what stricter scrutiny of degrees offered by candidates for admission and by careful selection based on the candidates' records in college and high school. In that event, the present laboratories in the main suffice. More relief from over-pressure would result in the improvement of the now inadequate service; and it would be a simple matter to arrange to care for the entire class in physiological chemistry and pharmacology at one time. Teaching and research could be entirely restored to their former status. The Hunterian Library would alone require urgent attention. Its present building is inadequate from every point of view: it cannot take care of a sufficient number of animals for the various departments using it, nor of the number of undergraduate students desiring to elect the courses that have been developed in it, nor of the research of which the modest structure has been the home. The history of this little laboratory may indeed serve as a guide in dealing with problems of laboratory creation and expansion. In these days, no school can be complete in the sense of carrying on and providing for all lines of work,—not even for all-important lines of work. Schematic symmetry of development is at once impossible, wasteful and undesirable. The point of departure nowadays must be, not a subject, but a man. Given the right man, the department will grow around him. Once the man is found, it is the part of wisdom to provide facilities without compelling sacrifices and compromises that consume his time and energy to no purpose. In this instance the men have been found. Conditions should therefore be rendered favorable to the best use of their abilities.

The argument in favor of the pressing need of a department of hygiene is weak just where the argument for improving the other laboratories is strong: a conspicuously suitable man is apparently not as yet in sight. While, therefore, it is probably true that hygiene is to be the next step in advance on the laboratory side, its immediate advisability depends (*a*) on obtaining an able man to create the department, (*b*) on the comparative importance of other needs which this study will set forth as it proceeds. The tabulation (pages 23-24) already referred to, will put us in position to judge between alternatives on the basis of their comparative importance.

A single suggestion remains to be considered, namely the proposition to build a new pathological laboratory on the medical school lot. With this proposal I am not in accord. In my

judgment, the department of pathology belongs just where it is, —on the hospital lot connected with the dead house. It is thus in immediate connection with its sources of supply and of easy access to clinicians who should follow their cases to autopsy. To disturb this ideal relationship would be highly unfortunate. The present building, however, requires renovation and provision for animals in the basement.

Summarizing, then, we may say that the defects on the laboratory side are mainly relative to the size of the school: (1) If the school is reduced in size, the urgent betterments needed include improvement in service, expansion of the Hunterian Laboratory, and renovation of the pathological laboratory, though small sums can advantageously be used in the departments housed in the physiological buildings. Ultimately pharmacology, the library and the offices ought to have a building to themselves, leaving the present building to physiology and physiological chemistry. (2) If, on the other hand, the school is to provide for 400 students, extensive reconstruction of all the laboratories is needed, as is shown on page 24.

The only absolute defect,—that is, defect that has no relation to the size of the student body—is the absence of a department of hygiene, the seriousness of which must be determined after the clinical situation has been studied.

THE CLINICS

The clinical instruction of the school is carried on in the Johns Hopkins Hospital, the relation of which to the medical school is ideal, for the hospital posts go automatically to those appointed to chairs in the medical school. The hospital lot, 800 x 800, contains six public wards containing 265 beds—180 free, 85 pay, two private wards containing 84 beds, to which professors and some of the associate professors in the clinical subjects may send patients, a one-story dispensary and the necessary adjuncts, laboratory building, administrative building, nurses' home, etc. The public wards provide beds for four services: (1) medicine, (2) surgery, (3) obstetrics, (4) gynecology. New clinics for pediatrics and psychiatry are building.

Financial Statistics—in part published, in part compiled by request—are given in Exhibits A and B. For our present purposes, the significant figures are the following:

The *cost* of the entire complex of buildings, exclusive of the pathology building already considered and of those for pediatrics and psychiatry now building, was \$2,683,639.10. Of this sum the public wards cost \$385,986.01, the two pay wards \$239,418.55. Administration building, nurses' home, kitchen, laundry, ice plant, etc.—in which both public and pay wards are interested—cost \$1,141,356.83.

The *general productive endowment* is \$3,488,744.69 to which are to be added special funds amounting to \$178,607.88—making a total of \$3,667,352.57. The net available income is \$180,931.34, of which \$11,340.14 go to a colored orphan asylum, which was provided for by Johns Hopkins' gift; the balance, \$165,016.09 is available for the hospital.

The *cash receipts* of the hospital aggregate \$204,838.86, of which for our purposes the significant items are:

Pay patients.....	\$160,425.69
Operating room fees.....	6,805.00
Surgical fees.....	842.57

The *total expenses* of the hospital were \$358,514.81. The difference between this sum and the cash receipts is charged against income from endowment, leaving a surplus income of \$15,915.25. In previous years the surplus has been spent in repairs and construction. Clearly the hospital can maintain no more beds unless it receives more endowment.

THE PRIVATE WARDS

The two private wards were built in accordance with the wishes of Mr. Hopkins and for purposes stated by him as follows: "You will also provide for the reception of a limited number of patients who are able to make compensation for the room and attention they may require. The money received from such persons will enable you to appropriate a larger sum for the relief of the suffering of that class which I direct you to admit free of charge; and you will thus be enabled to afford to strangers, and to those of our own people who have no friends or relations to care for them in sickness, and who are not objects of charity, the advantages of careful and skillful treatment."

It appears thus that the private wards were designed to yield a profit which could be used in extending the charity work of the hospital and to care for persons who could pay for the "room

and attention they require." As now carried on, the private wards serve neither object; they do not pay the hospital and they have become in large measure high-priced sanitarium for the well-to-do private patients of the prominent clinicians connected with the hospital and medical school. A few words by way of establishing these points:

Referring to the cash receipts of the hospital, it is important to observe that the receipts from pay patients are not the same as the hospital's income from the two private wards. To the private wards go patients who pay \$35 or more a week for room and board; but 85 beds in the public wards are reserved for patients who pay \$5 to \$10 a week. Income from these two sources is not separated on the books; a study of the last year made in the course of this work discloses the fact that of the total income from pay patients (\$160,425.69), \$130,917.60 were derived from the private wards. Now it will be observed that the financial statement of the hospital does not distribute the expense of operation between public and private wards. At my request the comptroller endeavored to distribute the entire expense for the last year between pay-ward service, public-ward service and out-patient department; from which it appears that at least \$113,327.89 of current expenditure are chargeable to the pay-ward service. There is thus an apparent balance to the good of \$17,589.71. But apparent only: over a quarter of a million dollars are tied up in the private wards themselves; in addition, some share of investment in kitchen, laundry, heat and light plant*, management of endowment, etc., are properly to be charged to them. Were there no pay wards, the income derivable from this amount would be applicable to the maintenance of more free beds. If the pay wards exist to earn money with which to extend the free work of the hospital, they must, first of all, then, earn the interest on the sum invested in them. Without reckoning depreciation, it is clear that even last year the hospital lost money on them. That they have lost great sums in previous years is undoubted.

Of the other items in the cash receipts, operating-room fees are paid (\$5 to \$10) by all who can afford it—that is, both full-pay and part-pay patients. How the sum is divided between the two classes is not known. Finally, the small but interesting sum, surgical fees \$842.57, is collected from pay patients,

* This would more than double the sum invested for the private work.

usually persons in moderate circumstances, who come to the hospital for treatment, not to some special surgeon connected with the hospital. They enter the private wards and are treated by a surgeon on the hospital staff assigned by the superintendent to the case. The reasonable fee charged for this service goes into the hospital coffers. The receipts from this source are diminishing, as the following table shows:

Memorandum of Income from Surgical Fees

1895.....	\$ 275.00
1896.....	438.50
1897.....	637.00
1898.....	850.00
1899.....	5,601.30
1900.....	4,473.00
1901.....	4,115.00
1902.....	4,573.00
1903.....	3,506.50
1904.....	2,600.00
1905.....	2,055.00
1906.....	1,398.00
1907.....	965.00
1908.....	840.00
1909.....	305.00
1910.....	842.57

The significance of the drop is obvious; the class of private patients whom the pay wards were mainly designed to accommodate have been largely shut out because of the growth of another class, not profitable to the hospital, but immensely profitable to its staff. With the exception of the surgical fees above named, all medical and surgical fees paid by upwards of 1,000 private patients annually treated in the pay wards are fixed and collected by the physicians and surgeons in attendance.

To sum up: The pay wards are thus an obvious convenience and advantage to the small number of professors privileged to use them, and they are practically full all the time, with a waiting list, except in summer. The tendency to fill them with patients who come to these physicians personally and not to the hospital as such has been developed by those to whom it has been a source of large income. The class of patients who used to pay the hospital a moderate fee in addition to room and board has been largely eliminated. The hospital has tied up more than \$200,000 in buildings which it maintains chiefly as an accommo-

dation to certain physicians and surgeons who, without risk or responsibility, can send thither private patients, for whom they procure, without expense to themselves, excellent care and from whom they collect large fees. I say "chiefly," not wholly; for in some instances the patients in the pay wards are scientifically interesting and not financially profitable: occasionally their expenses are paid by the clinicians interested in them. For patients of this latter class, it is necessary that suitable accommodations be provided—but not necessarily separate buildings.

THE HOSPITAL SERVICES

(1) MEDICINE

The medical staff consists of a head professor, a clinical professor, two associate professors, and 27 of lower rank. The budget* is as follows:

Salaries	
Professor.....	\$5,000
Clinical professor.....	1,500
Other instructors.....	4,600
Laboratory appropriation.....	2,550
Wages.....	1,196
<i>Total</i>	\$14,846

No one devotes all, or even most of his time to teaching and research. The brunt of the routine work falls on one instructor, who makes ward rounds three mornings in the week and teaches the whole group three mornings in the week, being thus wholly absorbed in routine visiting and teaching six half-days weekly; and on another, who gives twelve hours of routine instruction weekly. Fifteen instructors averaging a little over two hours apiece weekly teach in the dispensary.

(2) SURGERY

The surgical staff consists of a professor, five associate professors, each in charge of a special division, and sixteen instructors of lower rank. The budget is as follows:

Salaries	
Professor.....	\$3,000
Three associate professors.....	1,500
Other instructors.....	1,325
Laboratory appropriation.....	750
Wages.....	728
<i>Total</i>	\$7,303

*Of this and the following budgets, the hospital pays approximately one-third, the medical school the balance.

No one gives entire time to school and hospital work, though as a matter of fact the indifference to practice of the surgeon-in-chief and his uninterrupted scientific productivity have established excellent conditions, as far as he is concerned.

(3) GYNECOLOGY

The gynecological staff consists of a professor, two associate professors, and six instructors of lower rank. The budget is as follows:

Salaries	
Professor.	\$3,000
Two associate professors.	600
Other instructors.	300
Laboratory appropriation.	300
Wages	260
<i>Total</i>	<u>\$4,460</u>

The teaching in the department is largely carried on by subordinates.

(4) OBSTETRICS

The obstetrical staff consists of a professor, an associate professor, and three instructors of lower grade. The budget is as follows:

Salaries	
Professor.	\$2,000
Associate professor.	500
Other instructors.	350
Laboratory appropriation.	800
Wages	420
<i>Total</i>	<u>\$4,070</u>

In addition to the fact that the department is poorly housed in makeshift quarters, it suffers scientifically because of its detachment from gynecology. No good reason exists for the separate maintenance of departments of obstetrics and gynecology. In so creating them, an unfortunate English and American, as against a German, precedent was followed. As both departments are small, practical convenience as well as scientific soundness would be secured by combining them into a woman's clinic.

The remaining departments (excepting always pediatrics and psychiatry, in process of erection) are confined to the DISPENSARY, a one-story structure, too small to accommodate the patients who flock to it or the teaching that must be carried on in it.

THE CLINICAL SITUATION

The clinical situation may be most conveniently considered from two points of view: (a) the faculty; (b) the students.

(a) *The Faculty*

As contrasted with the instructors on the laboratory side, the clinical staff has been on the whole less productive and less devoted. The instructors do not devote their time to science and education,—indeed, only a few of them devote any considerable part. This is not in the first place their fault; for only one of them gets compensation enough to warrant the school and hospital in requiring a large share of his time and energy. I may even go further: the clinical departments are, as they now stand, probably more productive than any other in the country. On the other hand, one must in all fairness admit that, considering the conditions provided by the institution and the ideals which have been set up, the clinicians have with very few exceptions proved too easy victims to the encroachments of profitable practice. Not only has productive work been sacrificed to private professional engagements,—routine teaching and hospital work go by the board when a large fee is in prospect. Classes are turned over to subordinates in order that the chief may leave town to see patients, not because they are scientifically interesting, but because they are pecuniarily worth while. The meagreness of original output and the conditions existing in the private wards, as above set forth, are not independent of each other: they are both traceable to one cause, namely, the displacement of science and education by business.

Study of the junior staff in each of the clinical departments discloses analogous conditions, attributable to precisely the same cause. We were struck by the fluidity of the laboratory staff. The appointments in them are of recent origin; the instructors are all in training for service elsewhere. Productivity must therefore continue; stagnation is impossible. A man who ceases to do enough to attract attention from other institutions has by that same token ceased to have any claim on his position in any one of the scientific departments. “Be called or be dropped”—this stimulating alternative has enabled the laboratory staff of the Johns Hopkins Medical School to be the main factor in modernizing laboratory instruction throughout the country. On the

clinical side, conditions are strikingly different. One associate professor of surgery has been on the teaching staff since 1893, another since 1895; the two associate professors of gynecology since 1895; the associate professor of genito-urinary surgery since 1893; one associate professor of medicine since 1896, another since 1899. Among the associates now in the medical service, one appointment goes back to 1895 and two go back to 1899.

Many of the above-mentioned appointments thus date from the first classes graduated by the school. Though made for one year only, they are practically permanent. They have blocked the line, preventing the complete development of a distinctive race or school, and destroying one of the most powerful incentives to scientific devotion,—the prospect of a career. To some extent this unfortunate rigidity of the clinical staff is due to general conditions prevailing in the country at large; for few institutions have been until recently in position to call clinical teachers from elsewhere into their service. Yet this is by no means the complete explanation; for, with a single exception, when a Hopkins man has been called elsewhere, he has not been taken from the top of the junior staff as is the case under the normal conditions that prevail on the laboratory side. The top men on the junior clinical staff remain because they have long since ceased to be scientifically significant, and—hence outside institutions do not desire them; at the same time, these men have developed in Baltimore lucrative private practices which they would not abandon to accept an academic call elsewhere. Their high positions in the Hopkins assist their professional prosperity and demand no great sacrifice of time. They even draw small salaries and enjoy the privileges of the pay wards, which the hospital maintains mainly for their advantage.

It is an obvious suggestion that the situation described be relieved by supplanting all the individuals involved. But this would afford no permanent relief. As long as positions are bartered for unpaid or poorly paid service, carrying with it large opportunities and some real necessity for money making, few will reject the overtures of fortune. The history of the fundamental branches discloses the proper way to deal with the problem. When the Johns Hopkins was started, the full-time professor of anatomy, physiology, pharmacology, was a novelty in this country. He has amply justified himself. The increasing complexity and promise of clinical study in the wards and the

laboratories attached to them will not be satisfied with devotion and interest any less complete than that of the physiologist. Now, just at this moment when a clinical professor ought to be devoting himself wholly to academic and hospital opportunities, his conspicuous position offers him a financial fortune. If, then, what I have called "increasing complexity and promise of clinical study" are not to be sacrificed to worldly success, it is necessary to take in reference to the main clinical chairs the step which the Johns Hopkins Medical School was the first to take twenty years ago in reference to the fundamental chairs. They must be placed on a university basis; they must be made chairs for teaching and research; as such, proper salaries must be attached to them and an adequate paid staff must be organized in each department.

In my judgment, the next great advance in medical education lies along this line, not only in America but in Germany. The successive stages of modern medical development prepare one for this view. First came the mere creation of laboratories; then followed as a matter of course the assignment of whole-time men to them, because otherwise complex and exacting problems could not be successfully studied and worked out. The fundamental sciences have now been well developed; at every point they bear on the diagnosis and treatment of diseases. Clinical problems differ from laboratory problems only in being more difficult, more complex; the conditions as to service and devotion which have succeeded in the laboratory must therefore be introduced into the clinic. Presently we shall realize not only that in the clinic whole time and whole energy and whole attention are needed, but that even that leaves something to be desired.

I have said that this is true in both Germany and America. It is true because the very nature of scientific medicine forces it. The Germans have thus far done better than we without it because, their scientific ideals being more potent, men have been less readily led away from science to money. Yet changes in social life are having their effect there too; so that in Germany, also, one may say that whole-time clinical teaching is needed, not only because clinical problems cannot otherwise be solved, but because the scientific clinician needs once for all to be protected by the nature of his university relation against insidious distraction.

It is obvious that the policy of organizing the essential clinical chairs on a university basis will correct other evils that have been pointed out. Let us assume a professor of medicine and a few assistants giving all their time to university and hospital. Fewer teachers than are now employed will be needed,—the huge staff can be cut down. The use of part-time men, engaged in practice, will be discussed presently; certainly in the hospital itself they will be usable at most to a very limited extent. The paid juniors will be productive men; they will be called elsewhere. Congestion will cease; a career will be opened to men below. The conditions that have been so stimulating on the laboratory side will have been introduced on the clinical side. It will continue to be necessary to employ practitioners in the dispensary, which should be in charge of a paid chief of staff. Wherever part-time men are used, their appointments should be for brief terms, not renewable except for merit. The more recent graduates will throw themselves into dispensary teaching with great enthusiasm; and as soon as they are well started in practice, they should make way for others.

Whether the extremely prosperous physician or surgeon should have a place in such an institution as the Johns Hopkins Hospital seems to me most doubtful. Once there, he will invariably exploit his prestige for his own pecuniary benefit. He thereby brings the institution into disfavor with the local profession, who very rightly believe that he is using his position to collect more and larger fees than those lacking such a connection. Moreover, the spectacle is not a wholesome one for students to witness. Johns Hopkins bade his trustees remember: "In all your arrangements in reference to this hospital you will constantly bear in mind that it is my wish and purpose that the institution shall ultimately form a part of the medical school of the university." Now between an ordinary hospital and a university hospital there is this important distinction: The ordinary hospital is engaged in treating the sick—the poor for nothing, the rich for pay. The university hospital has no interest in making money for its staff; it subordinates all it does to the educational point of view, and its benefaction and philanthropy are all the broader because of this apparent restriction. For it advances knowledge and trains a steady stream of men to carry advancing knowledge through the world. By treating fewer cases, the university teacher in the end helps more sick people.

The university hospital is the place for those physicians and surgeons only who are more interested in ideas than in the volume of their own professional business. Whenever a physician or surgeon, having perfected himself in a specialty, sits down to do the greatest possible business with it, he may indeed still be doing a useful and helpful work; but its place is no longer inside a university hospital, all of whose arrangements must constantly bear in mind the needs and ideals of a university medical school. To the argument that students need contact with practicing physicians I attach only limited importance.* Students need training, and that they get best from genuine teachers. Subsequent experience with patients and with the world will have in any case to rub off their edges. "Routine most physicians learn in practice too rapidly, anyhow," said Billroth, the great Vienna surgeon.

The medical school point of view ought then, as it seems to me, to govern hospital organization and policy. This was the purpose of the founder—a purpose the wisdom of which has been confirmed by the outcome of twenty years' experience. In reference, therefore, to the busy and prosperous practitioner, the question to ask is: "Is he necessary to the medical school?" and if not, then not to the hospital.

The type of man here under discussion would be of little avail in the medical school or hospital if a paid full-time staff were in charge of each department. The total amount of teaching required would not seriously burden a staff of full-time men; the hospital services, all being small, could be readily cared for by the paid staff with the assistance of residents, etc.

Objection to the plan above proposed concerns its feasibility rather than its desirability. If the professor is to accept no fees, is he to see only free patients? Such a policy would deprive him of the opportunity to see rare and interesting cases sent to him from various parts of the country. For this reason, a "sieve" needs to be provided in the person of a properly qualified assistant who will protect the chief, passing into the private wards only cases that are worth his time and energy. In such cases, the hospital, following the usage already pursued in case of the surgical fees heretofore touched on, would charge a reasonable fee, with the imposition and collection of which, how-

* The student is in contact with practitioners in all dispensary work; he will not therefore suffer on this score.

ever, the attending physician would have nothing to do. The fees thus collected might fairly be pooled as an offset against the expense involved in maintaining the chairs in question on a university basis.

Clinical staffs, all the members of which are thus protected, might not keep the two private wards full; and if they are not full most of the time, they will in future lose more heavily than in the past. I suggest, therefore, that at first only a single private ward be maintained. For it cannot be too strongly emphasized that the hospital is under no obligation to provide extensive accommodations for private patients. Do what it will, it can provide for but a fraction of those willing and able to pay for its privileges. This is a field into which it cannot go far without interfering with its main purposes.

If one ward proves adequate to accommodate patients enough to serve the purpose here in view, the second private ward could be readily converted into a woman's clinic. The present gynecological ward would be available for dermatology and other specialties whenever the necessary support can be obtained.

If, on the other hand, it is ultimately deemed best or necessary to continue both private wards as at present, it may be necessary to give the practitioners employed in the dispensary and elsewhere the use of such beds as the full-time staff does not require, in which event, the hospital should nevertheless continue to determine and to collect fees, turning over to the practitioners in question a reasonable share. The present method by which the physician or surgeon charges what he pleases should in any event be summarily stopped.

(b) *The Students*

The faculty once reconstructed on the lines above laid down, the students require consideration only in relation to their number and the quantity of clinical material.

The number of students for whom the clinical material available in the hospital suffices is largely a question of the teaching methods employed. The school believes—and very rightly too, that the clinical clerkship should be the central feature of its clinical training. This involves the assignment to each student in the appropriate trimester of several beds, which are "his" in the sense that he is expected to make close and continuous study of the patients occupying them. As the professor makes his

ward rounds, the clinical clerk receives in the first instance the brunt of his questioning. Other teaching methods—general ward classes, ampitheatre clinics—can to some extent be profitably used; but the clerkship is the distinctive feature of individual, as against group or mass, training on the clinical side.

The present hospital will support such training for not many more than one hundred students in the third and fourth years. In the effort to teach more, the method has been insidiously changed. Continuous clerking with responsibility for several beds has turned into something like the discontinuous clerking in vogue at Edinburgh, where not a bed, but a patient, is assigned to one student or more. Originally each student had five to seven patients all the time; now he is lucky to get two. As clinical clerking in its complete development thus shrinks, the teaching loses its individual character.

In general, the relative defects on the clinical side have the same history as those of the laboratory side. The clinical instruction was designed to give maximum opportunities to selected students. The research idea was indeed much less conspicuous on the clinical than on the laboratory side. However, this does not affect the point here under consideration: the relation of the clinical student to his teacher and his material was in the early days of the school analogous to that prevailing in the laboratories. Coincident with the expansion of the school beyond 250, this relationship has lost its intimacy. If, then, the school is to expand to 400 or beyond, the amount of clinical material available must be greatly increased. Even so, the close relationship between teacher and student will not be restored, though the clinical clerkship can be re-established in its proper form.

The problem as to whether a school of 400 will at this time really have any scientific or educational advantage over a school of 250 must be studied in the light of the considerations already adduced in discussing the laboratories. Besides, the larger school will necessarily involve greater administrative responsibilities and to that extent may tend to withdraw the departmental heads from the productive work for which it is urgent that they procure more time and energy.

The clinical situation, however, differs from the laboratory situation in one important respect. If the entire school is held at 250, the laboratories fairly well suffice as they stand; but while the school must have more clinical material if it grows, it

ought to have more, even if the enrollment is held down. It is the peculiarity of clinical teaching and investigation that it must handle a vast mass of material in order to be sure of getting what it actually needs or prefers. Not only, then, are certain desirable services actually lacking to the school, but the existing ones are, to say the least, not extensive. Eighty-five of the public ward beds are held for part-pay patients; that is to say, the ability of the patient to pay \$5 or \$10 a week, rather than his scientific or educational interest, regulates admission. Of course, many of the free beds must on humanitarian grounds be filled with scientifically and educationally uninteresting cases. In order, then, that a surgeon or a physician engaged in the study of a problem may be sure of having the right material when he wants and needs it, a large reservoir must be provided: if a really large number of beds is available, fill them as one may, the probabilities are that the necessary material will be found in them.

The increased amount of material necessary if the school is to be large, is thus highly important anyhow. The situation would not be assisted by putting up more buildings or more beds, unless additional endowment accompanied them; for the present funds will not sustain an additional patient. In view of the enormous expense involved in keeping up an establishment rich in clinical material, it seems probable that even medical schools which possess endowed hospitals will be forced to utilize state and municipal institutions besides. Fortunately, the City of Baltimore is now building at Bay View—twelve minutes distant from the Hopkins Hospital by direct car line—a really admirable municipal hospital. Its first medical pavilion, just finished, contains 150 beds; others on the same model will follow. The institution is administered by the Board of Supervisors, an excellent body as it is now composed.

ALTERNATIVE USES OF PROPOSED SUM

In view of the various considerations above set forth, what are the alternative uses to which \$1,000,000 may be put?

I

(a) School to be reduced to 250. This involves a loss of 97 students on the present enrolment, spread over four years, meaning ultimately a decrease of \$19,400 in income from tuition.

The school would then stand in point of numbers where it stood in 1902, at which time the cost of operation was \$73,372.21. The present cost of operation is \$106,456.49. The cost of operation cannot be brought back to the former figure; it cannot even be reduced by the amount lost in tuition fees—first, because it is more difficult to cut down staff, service, etc., than to increase them; second, because in the interval wages have increased, while tuition fees have remained constant; third, because there has been some actual expansion in the direction of library growth, etc., which could not be stricken out; finally, because reducing numbers make possible once more certain more expensive forms of teaching which ought to be re-introduced.

It seems probable that economies could not be effected equal to more than one-half of the amount lost on tuition fees; in which case \$200,000 of the proposed sum must be held as endowment to offset one-half the loss on tuition fees resulting from reduction of the school to 250.

(b) \$40,000 to be applied to rebuilding and equipping the Hunterian Laboratory and \$60,000 to be set aside for its support.

(c) Departments of medicine, surgery, pediatrics, psychiatry and woman's clinic to be placed on full-time basis.

The various departments could be organized on some such scheme as follows:

<i>Medicine:</i> Chief	\$7,500
Associate professor.....	2,500
Associates and assistants.....	7,000
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I very much question whether it is wise or necessary to continue the practice of paying sums like \$50 or \$100 to each of fifteen or twenty dispensary and other workers. The title and opportunity are valuable and the staff cannot be permanent. The dispensary chief, however, should receive higher compensation.

<i>Surgery:</i> Chief	\$7,500
Associate professor.....	2,500
Associates and assistants.....	5,000

<i>Woman's</i> Chief	\$7,500
<i>Clinic:</i> Associate professor.....	2,500
Associate and assistant.....	2,500

At present the appropriations for the four departments amount to \$30,679; an additional \$35,000 or \$40,000 would probably be needed to carry out the plan sketched, including the oncoming departments of pediatrics and psychiatry.

Against this charge, fees, assessed by the hospital for the services rendered by the full-time staff to patients attended by them, following the analogy of the surgical fees above discussed, would be an offset. That reasonable fees would go far towards netting the entire sum is perhaps not an over-sanguine expectation. Nevertheless, the most important point is that no professor be driven to spending time on uninteresting cases just because there is a sum to be earned or because patients can pay the hospital for their services: for if the case is a routine one, some one else on the staff can do as well by it as the chief; and if it is scientifically interesting, the chief will want to watch it quite regardless of the fee. In order, therefore, that the new system may be started and worked out on its merits, \$700,000* must be held provisionally, the income thereof to be devoted to financing the project. As soon as experience demonstrates how far the new arrangement can be counted on to finance itself without prejudice to its spirit and object, this sum, or some definite part of it, would be released to be devoted to the other objects mentioned in the alternatives below.

II

School to be reduced to 250; clinical departments to be left as at present. Proposed gift to be applied as follows:

Construction and equipment

Department of bacteriology and hygiene.....	\$150,000
Building for pharmacology, library, and offices..	100,000
Hunterian Laboratory	40,000
Dispensary	40,000

Support

To offset one-half loss in tuition fees.....	200,000
Department of bacteriology and hygiene.....	200,000
Addition to present support of	
(1) Pharmacology and physiological chemistry	50,000
(2) Hunterian Laboratory.....	60,000
(3) Dispensary.....	60,000
<i>Total</i>	\$900,000

Balance of \$100,000 as margin.

*The Hopkins endowment now earns 4.8%; my calculations assume 5%; but the allowances are liberal enough to stand the difference.

III

School of 400 students. Clinical departments to be left as they are; more clinical material must be at once obtained. Proposed sum to be applied thus:

Construction and equipment

Department of bacteriology and hygiene.....	\$150,000
Building for pharmacology, library, offices.....	100,000
Expansion of anatomy, physiology, physiological chemistry, pathology.....	100,000
Hunterian Laboratory or dispensary.....	40,000

Support

Department of bacteriology and hygiene.....	\$250,000
Addition to present support of	
(1) Pharmacology.....	50,000
(2) Anatomy, physiology, physiological chemistry, pathology.....	100,000
(3) Hunterian Laboratory.....	60,000
(4) Dispensary.....	50,000
<i>Total</i>	\$900,000

\$100,000 reserved as margin.

A saving might be effected by providing one larger building to include bacteriology, hygiene, pharmacology, library, and offices.

It is clear that a number of combinations can be made of the various factors that figure above. The real choices are, however, first as to whether the school shall be one of 250 students or of 400 students; second—and conditional upon a decision in favor of 250—as to whether the clinical chairs should be put on a university basis; for a decision in favor of 400 necessarily results in leaving the clinical chairs as they are, the money being absolutely needed for the expansion of the laboratory facilities.

Assuming that quality rather than quantity is aimed at and that the Johns Hopkins product has now, as it has had from the start, qualitative rather than quantitative importance, my judgment inclines strongly to alternative I; in the first place, because it achieves what is presumed to be the main purpose of the proposed sum—it sets up a school that will be in essential respects a model to stimulate endeavor throughout the country, a model, moreover, not too far removed to be capable of successful imitation at St. Louis, Boston, Cleveland,—wherever medical educa-

tion is taking on modern form; in the second place, because it only postpones, but does not prevent, the completion and extension of the present laboratory plant, since much, perhaps all, the fund needed as guarantee to inaugurate the new movement will in time be released for other objects. In my opinion, the additional laboratory facilities are of much less importance at this moment than the re-organization of the clinical departments. It is true that their absence leaves the school incomplete. But more or less incomplete it is bound to be anyway. A school representing a growing science and a changing profession must necessarily present an uneven front. No such school can be entirely symmetrical,—indeed, no single department can. Selection must take place. The question is therefore always, what is the best and wisest that any particular institution should next choose to do? The answer depends on the function which the institution discharges, or the capabilities of the men at hand. Whatever the size of the sum under consideration, these two aspects ought to determine judgment. The first of the alternatives suggested seems to me most fully consonant with both.

Respectfully submitted,

ABRAHAM FLEXNER.