

fruitless trials of various supposed means of cure, but it has been done by exact laboratory work by quiet men working far away from the sick room, with not a single human patient under their care, men who are not practitioners of medicine, but pathologists and bacteriologists, experimenting on rabbits, guinea-pigs and mice instead of on men, women and, especially, dear little children, and thus working unobserved and unheralded and unseen they have given to the human race a boon second almost to that of Jenner. The mortality of diphtheria has fallen from 40 to 8.8 per cent., and in laryngeal cases before the serum treatment the mortality was 73 per cent., recoveries 27 per cent., and now precisely the reverse has become the case.

Great epidemics of typhoid have been traced to one case contaminating the water supply of a city, which is preventable.

Malaria was formerly thought to come from marshes and decomposing vegetable matter; now, thanks to the investigations of medical men, you all know perfectly well that if you shut out the mosquito you shut out malaria, as well as yellow fever. When the United States digs the Panama canal, there will be seen a splendid object lesson in sanitation that will carry conviction to all of the money value of medical research in the saving of millions of dollars and thousands of lives.

We are on the verge of an equally beneficent improvement in the treatment of tuberculosis. In Germany the cure of even 10 per cent. adds two millions annually to the resources of the state, and human lives and human happiness can not be reckoned in dollars and cents.

In military hygiene and sanitation the money return is equally profitable. Witness the fearful losses of the British from preventable disease in South Africa, or, worse still, our own losses in the Spanish-American war, where the mortality from wounds was 1 per cent. and that from preventable disease 70 per cent. This could be now characterized as governmental murder through criminal neglect, since the Japanese have practically eliminated disease as a factor in war.

The Japanese determined that their only hope in the war with Russia was that every man who died should die on the field of battle, and in that way neutralize the superiority of two million Russians under insanitary conditions with half a million Japanese protected from disease by a capable medical corps backed up by their government with every authority and facility to prevent disease.

Translate all these facts into figures and the commercial value of modern surgery and of all the medical work done in diseases of animals, and who can tell us the money value of medical research work?

Dr. Pritchett, in McClure's magazine, well says that "The research habit, once thought so far removed from utilitarian ends, is to-day the greatest financial asset of Germany," and we Americans, whether at home or in her possessions, can acquire that "research habit" and teach it to our charges and make it our best and most valuable financial asset, but this takes money.

On account of the complexity and multitude of questions to be solved, such a board as suggested would hardly have a complete outline of plans in two years, and a further reason for its prompt creation lies in the fact that some such definite action is necessary in order to successfully invite private endowment, which must be secured in view of the enormous expense entailed by modern university school methods, particularly in the medical department; further, the appointment of

regents would give the department of education the exact impetus it needs at the present time by opening up to its students the vista of higher education.

There is surely a rich man, or better still a rich woman, somewhere who can be found willing to contribute by his or her means to establish a Philippine University Medical School and perhaps temporarily to assist the present school of San José to increased production until it can be absorbed by the university.

The medical profession is but waiting to assist with all its power an earnest and active board to point out to donors the genuine and lasting pleasure that it gives to share in the great and lasting benefits given to humanity by the research workers in medical fields.

## THE TEACHING OF PEDIATRICS.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON DISEASES OF CHILDREN, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

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BOSTON.

Harvard requires for admission to its medical school a degree in arts, literature, philosophy or science from a recognized college or scientific school, except that those who have acquired an equivalent education may be admitted by a special vote of the administrative board in each case. All candidates are required to satisfy the faculty that they have had a sufficient course in theoretical and descriptive (inorganic) chemistry and qualitative analysis or to pass an examination in the same.

The course of study required for the degree of M.D. is of four years' duration. The first three years are devoted to prescribed work and the fourth year entirely to elective courses. A minimum of 1,000 hours' work is required of each fourth-year student. Written examinations are given in the studies of the first three years. In the fourth year the nature of the examination is determined by each department, subject to the approval of the faculty. The whole of the first half of the first year is devoted to anatomy and histology; the whole of the second half to physiology and physiologic and pathologic chemistry. The first half of the second year is given to pathology and bacteriology. The second half of the second year is devoted to elementary medicine and surgery, with lectures on hygiene and pharmacology, and is preliminary to and preparatory for the third year. Two hours a day of this half year are devoted to section work, in which the students are given instruction in physical diagnosis, examination of the blood, urine, gastric contents and so on, in small sections in the hospital clinics.

The third year is devoted largely to medicine and surgery. Pediatrics, neurology, dermatology, obstetrics, gynecology, orthopedics, syphilis, psychiatry, therapeutics, laryngology and otology are also taught more or less in detail. The first two hours of each morning are devoted to clinics and clinical lectures for the whole class, and the second two hours to section teaching. Lectures to the whole class occupy two or three hours of every afternoon.

The present third class consists of about seventy men and is divided into thirty sections of two or three men each. These sections are assigned to work in groups

varying from two to ten. This work consists of bedside instruction in the wards or out-patient departments of the various hospitals. Enough instructors are provided so that, if every student is present, no instructor has more than six students; usually he has but three or four. The students in this way receive almost individual instruction. Each exercise lasts from one and one-half to two hours. The exercises are so arranged that, as a rule, every section is busy somewhere. The following extracts from the tabular views of the two terms show much better than any description the arrangement of the section teaching.

The fourth year, beginning with this autumn, is elective. The subjects are divided into courses. Each course equals 125 hours. The student must take 1,000 hours, or eight courses. This is equivalent to one course a month for eight months. Courses are given all day for one month, or half a day for two months. All day means from 9 to 1 and from 2 to 6 every day. Half a day means from 9 to 1 or from 2 to 6 every day. The student must decide on his courses for the year at the beginning of the year. The students are divided among the different months by a special committee of the faculty. Each department decides what the work is to be in its courses. A man may take more than one course in a given subject if he desires, but can not devote the whole year to one subject without the consent of the head of the department. The courses are not graded.

The courses advised by the committee for men who intend to enter general practice include: Medicine, 3 courses; obstetrics, 1 course; surgery, 1 course; pediatrics, 1 course; neurology, dermatology or gynecology, 1 course; otology, hygiene, bacteriology, histology, physiology, chemistry or neuropathology, 1 course.

The elective fourth year enables the student to take a general course of study or to devote a part or all of his time to the subject or subjects in which he is most interested. The future alone can tell how it will work out. In all probability most of the students will select their courses with a view to entering general practice, while only a few will turn at once to the study of a specialty. The personal popularity of the instructors can not fail, however, to influence the students to a certain extent in their choice of courses. On the whole, I think that men who have studied hard for three years after having been through college can be trusted to choose wisely and to make the best of their opportunities.

The department of pediatrics consists of a professor, an assistant professor of contagious diseases, an instructor, a clinical instructor and two assistants. The department practically controls the medical wards of the Children's and the Infants' hospitals, as the nomination of the visiting physicians to these hospitals is in the hands of Harvard University. The visiting physician nominates his subordinates. These hospitals afford a large amount of clinical material for instruction both in the wards and in the out-patient departments. About 700 medical cases are treated annually in the wards of the Children's Hospital and about 200 cases at the Infants' Hospital, while about 3,000 medical cases, making 6,000 visits, come to the out-patient department of the Children's Hospital and about 2,000 cases, making 7,000 visits, to that of the Infants' Hospital. The surgical sides of these hospitals can also be utilized, if desired. The Infants' Hospital wards are limited to babies under 2 years, and the great majority of the out-patient cases are infants, although children as old as 12 years are treated. Both infants and children are treated in both the wards and out-patient department of the Children's

Hospital, but the vast majority, especially of the ward cases, are over 2. The present assistant professor of contagious diseases is resident physician at the contagious department of the Boston City Hospital. About 2,000 cases are treated there annually, mostly of diphtheria and scarlet fever, but some of measles and chickenpox. Smallpox patients are not admitted.

Instruction in pediatrics in the third year is given to the whole class by lectures, clinical lectures, recitations and case teaching, and to sections in the wards. Thirty lectures, 24 clinical lectures, 10 recitations and 10 exercises in case teaching are given. The first lectures are on diphtheria and the exanthemata, preparatory to the section teaching at the hospital for contagious diseases. The theory of infant feeding is then taken up and is followed by 5 practical illustrated lectures on the preparation of modified milk in all its forms. The next lectures are devoted to the diseases of the gastrointestinal tract, and are immediately followed by a series of clinical lectures on these diseases. The topics of the rest of the lectures vary from year to year, but the diseases of nutrition and those of the heart and lungs are almost always taken up. The lectures continue until the first of May. The clinical lectures start at the beginning of the year and continue until April. The recitations begin in February and are designed to cover the more important of the subjects not touched on in the lectures. The case teaching closes the year. In this form of teaching each student is given a typewritten copy of the history and physical examination of an actual case. He is supposed to study this case carefully with his textbooks before the exercise, when it is taken up and discussed in detail. The exercise is conducted chiefly by questions, the object being to make the students think for themselves as far as possible. Particular attention is devoted to the details of treatment.

Each section has seven or eight visits at the hospital for contagious diseases and from 20 to 22 at the Children's and Infants' hospitals. At the hospital for contagious diseases the students have the opportunity to become intimately acquainted with the exanthemata and diphtheria. Intubation is at present taught entirely on the cadaver, but it is hoped that in the new elective fourth year it will be possible to teach it on the living as well. At the other hospitals the students see a considerable number and variety of cases. In this section work the time is devoted to the examination and discussion of the cases by the students themselves under the supervision of the instructors, as little time as possible being given to didactic teaching.

In the new elective fourth year the department of pediatrics offers a course each month. A course occupies the whole of each day during the month and counts for 125 hours. A student may take more than one course in pediatrics, if he desires, but can not devote the whole year to it without the consent of the professor of pediatrics. The courses are not graded. The students electing pediatrics are divided among the months by a special committee. The department of pediatrics decides what the work shall be in each course.

The character of the teaching has not yet been entirely decided and must, of course, depend a good deal on the number of students electing the subject and the number to be taught in each month. The general plan, however, is to have the students assist in the work of the hospitals, both in the out-patient departments and in the wards, and to study special cases or groups of cases under the supervision and with the assistance of the

instructors in the department. They will be required to do considerable reading in connection with their cases and, if possible, to undertake more or less original investigation. Those who elect but one course can not, of course, go very far in the subject, but those who elect several courses or who devote the whole year to pediatrics will have the opportunity not only of getting a good comprehensive grasp of it, but also of following up special lines of work and of carrying out original researches.

Special courses for graduates have been given in the past throughout the winter months. In the future graduates will be admitted to the fourth year elective courses and the character of this instruction modified as far as possible to suit their individual needs. Summer courses, open to both graduates and undergraduates, are given in each of the summer months. In August and September they are arranged to occupy the whole of every morning. The opportunities for graduate instruction in pediatrics in Boston have not been generally known or appreciated as they should have been in the past. It

taught unless it is a separate department. If it is made a part of the department of obstetrics or of gynecology, as in some schools, it is certain to be neglected and to be improperly taught. It is too important a subject even to form a part of the department of internal medicine. When it is in that department, as it is in some schools which in other ways are most progressive, it is sure to be insufficiently and imperfectly taught, as it is in them. No man is competent to appreciate how much there is to be known about pediatrics and how little there is known about it, even by the best men in other lines, except the man who makes it a specialty. If the faculties of our medical schools did appreciate these facts there would be an independent department of pediatrics in every medical school. No one who does not make a specialty of pediatrics is, moreover, competent to teach it as it should be taught.

While the time allotted to pediatrics in the third year at Harvard is, of course, entirely inadequate in which to teach the students all that they ought to know about the subject, it is, I think, about all that its relative im-

DECEMBER		28	29	30	1	2	3
		Mo.	Tu.	We.	Th.	Fr.	Sa.
SURGERY, Major	M. G. H.	16-20	16-20	16-20			
	B. C. H.	11-15	11-15	11-15			
Major	M. G. H.	6-10		6-10	16-20		16-20
	B. C. H.		1-5			11-15	
MEDICINE	M. G. H.	27-30			27-30		27-30
	B. C. H.	21-24			21-24		21-24
	B. D.	25-26			25-26		25-26
	Ho. G. S.						
PEDIATRICS	Children's	1-5	26-30	21-25		16-20	11-15
	So. Dept.				1-3	6-10	1-5
	Infants'				4-6	28-30	7-9

A dash between numbers on both tables includes the corresponding sections.

is hoped that more advantage will be taken of them in the future.

I have described the teaching of pediatrics at the Harvard Medical School in so much detail for several reasons, one of which is that as I am more familiar with it than with that in other schools I can take advantage of both its merits and defects in discussing the best methods of teaching pediatrics in our schools. Another reason is that, owing to the untiring energy and incessant effort of Dr. T. M. Rotch, the present professor of pediatrics, the department of pediatrics at Harvard has for many years been accorded more nearly the consideration which the importance of the subject deserves than has been granted in other schools. On this account the department has had the opportunity to work out many problems in methods of teaching and by actual experience to arrive at a comparatively high grade of efficiency. The department of pediatrics at Harvard is a department by itself and not a part of or subordinate to any other department. Pediatrics can never be satisfactorily

APRIL		27	28	29	30	31	1
		Mo.	Tu.	We.	Th.	Fr.	Sa.
SURGERY		17-18	17-18	17-18	17-18	17-18	17-18
MEDICINE	M. G. H.						9-16
	B. C. H.		9-16		9-16	9-16	
PEDIATRICS	Children's	9-13	1-5	9-10 13-16			
	Infants'						1-3
LARYNGOLOGY	D. D.		24-30		24-30		24-30
	B. C. H.						
OTOLOGY, E. & E. I.							
SYPHILIS, B. D.				1-8		1-8	
DERMATOLOGY, M. G. H.		1-8			1-8		
GYNAECOLOGY	B. D.						
	B. C. H.		14-20		17-20		17-20

portance justifies. Pediatrics is recommended, moreover, as one of the fourth year electives for those students who intend to go into general practice and opportunity for further study is also provided in the fourth year. This division of the work between the third and fourth year is, I think, fairly satisfactory when the studies of the fourth year are elective. If the course of study for all four years is prescribed, I feel sure that the greater part of the teaching of pediatrics should be given in the fourth year, when the students have a better knowledge of internal medicine and of physical diagnosis. In the third year, at any rate at the beginning, they are hardly competent to make the most of pediatrics, especially in its clinical aspects. On this account I feel that in schools in which the fourth year is elective the greater part of the clinical teaching of pediatrics in the third year should be given in the second half of the year. The first half of the year could then be devoted to preparatory lectures and to instruction in the anatomy, development, physiology and path-

ology of infancy and childhood, providing those subjects had not been taken up earlier in the course. In Harvard, at least, the students are taught little or nothing about these subjects at these ages and are consequently not properly prepared to take up the study of pediatrics. I believe that instruction in these subjects should form a part of the regular courses in anatomy, physiology and pathology. If these departments are not prepared to give such instruction, it should then be given under the direction of the department of pediatrics at whatever time these subjects are taught.

It is very difficult to decide as to the relative proportions of the various forms of teaching which will give the best results. Personally, I believe that there is still room for a moderate amount of didactic teaching in the form of lectures and clinical lectures (amphitheater clinics for a whole class). The reading of textbooks can never take the place of lectures, if they are given as they should be given. The right sort of a lecture can paint a picture of disease, bring out the cardinal points and leave an impression on the mind which no textbook can possibly do. Lectures which are merely a monotonous recital of the author's or someone else's textbook are, however, worse than useless. There are also certain cases with gross lesions which are suitable for demonstration in the amphitheater and which, when shown in this way, save an immense amount of time for the study of the far larger class of cases which require closer observation and individual examination. Recitations are, I think, practically useless. The same result is attained, with the additional advantage that the students are made to think for themselves, by the "case teaching" already described. This form of instruction should, I think, replace recitations and possibly a part of the lectures. It is more valuable toward the end than at the beginning of the course. In any case, the bulk of the instruction should be given in the form of section teaching in the hospitals. This is the only way in which pediatrics, or any other medical subject for that matter, can be satisfactorily taught. There can not be too much of it. In this way alone can the student really learn to know diseases and their manifestations and properly prepare himself to treat them intelligently. The most serious obstacle to this form of teaching is the large number of instructors required and the expense entailed thereby. While this is an obstacle which it is at times difficult to overcome, it does not in any way, however, militate against the value of section teaching and consequently must be overcome, whatever the cost.

In conclusion, the teaching of pediatrics, as of other kindred subjects, will never be ideal until the instructors, or at least the heads of departments, devote their entire time and energy to their teaching. They should not be allowed to see private cases except in consultation and then only after they have given a definite amount of time to their teaching and hospital work. Men can not afford to do this, of course, unless they are paid higher salaries than at present. Living salaries can only be paid, however, when the chairs are endowed. We must look to our wealthy and public-spirited citizens to do this.

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**Remedy for Furuncles.**—Dr. A. G. E. Naylor states in the *Australasian Medical Gazette* that he has found compound tincture of benzoin a specific for all kinds of boils. It is applied freely, around and over the boil, within twenty-four hours of its appearance or before suppuration commences.

## THE SPECIALTIES IN RELATION TO THE GENERAL PRACTITIONER.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON LARYNGOLOGY AND OTOTOLOGY, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

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It is my privilege to open the Section on Laryngology and Otology of the American Medical Association—a highly appreciated privilege which you have conferred on me by electing me your chairman, and for which I desire to thank you. It is not only a privilege, but an honor which I have done little to deserve, but I will endeavor to show my appreciation by presenting a few suggestions in the course of the customary chairman's address, which I trust will be accepted in the spirit in which they are given, not only by this section, but by the profession at large.

There never was a truer saying than that "the more we learn, the more we recognize how little we know." If this truism holds good in the general philosophy of life, it is applicable with even greater force to any subdivision of human knowledge, and not with the least degree of emphasis to general and special pathology.

No one can justly pretend that twenty years ago the leaders of the medical profession, the lights of learning, were lamentably deficient in a clear perception of philosophic principles; no one will accuse them of purposely and wilfully thwarting the progress and development of the science to which they had devoted their lives; no one will seriously deny that they have honestly and faithfully endeavored to act in accordance with their best judgment, conviction and enlightenment, to the best advantage of the noble art whose interests had been entrusted to their care. The same may also be truly said of the guardians of medical prerogative of all ages, but I select for purposes of illustration the period of twenty years ago, because it is a time of personal recollection, a time of which we can judge by personal knowledge of the conditions and circumstances under which medical lore was dispensed and practiced. With that knowledge of circumstances and conditions before our mind's eye, let me ask you what position did the medical world of twenty years ago occupy toward those branches of the art which this section has adopted as worthy objects of special cultivation, teaching, care and practice. It was a position of utter indifference, and it mattered not an iota whether or not the medical student of that day had absolved the short and elective course in our specialties—the only one available—in order to stamp him a full-fledged physician. It is no use arguing that the time for specialism was not so ripe then as it is now, because we know that since time immemorial the medical profession has recognized the desirability and necessity of allotting the treatment of special ailments to specialists; but the ear, the nose, and the upper air tract were treated like step-children, and it is only in the enlightened days of a more recent past that we condescended to raise them to the dignity of legitimate members of the pathologic family. There would be neither explanation nor excuse for the attitude of former cycles but for the truism which I cited as the introductory remark of my address, that the more we learn, the more we recognize how little we know.

As our knowledge of nose, ear and throat affections increased, as we found that local pathologic conditions were frequently responsible for constitutional ailments,