features of interest, and discusses the case generally. Similar methods are employed in teaching surgery and in the special departments, which every student is required to attend for a certain definite number of hours during the session as one of a small class. Classes for special clinical instruction in therapeutics quite distinct from the systematic instruction in pharmacology and therapeutics are held in some schools.

IV.—Pathology.

The pathological departments of the universities visited were generally fine buildings very completely equipped. In many normal histology was under the charge of the professor of pathology, and in some the instruction was actually given by him and his demonstrators. The study of pathology was usually commenced in the second year, that is to say, at a period when anatomy and physiology were still being studied; in some, bacteriology was commenced in the first year, but as a rule the study of pathology was commenced in the second year either with elementary bacteriology or morbid histology; sometimes both subjects were taken at the same time.

The Concentration System.—At Harvard instruction in such subjects as anatomy, physiology, and pathology is carried out by the concentration system, under which the entire time of the student is devoted to the consideration of a single general subject, such as anatomy, physiology, pathology, as the case may be, and the whole course of instruction is carried out in the period of four months. Thus at Harvard, pathology is studied in the first term of the second year.

Size of Practical Classes.—The "section method," that is to say, the division of the class into small numbers under the charge of an instructor or demonstrator, was followed throughout the States for the practical teaching of almost all subjects, and at Harvard the proportion of instructors and demonstrators to students was approximately one to ten; a very complete record of the students' work is kept, and a report made to the professor.

Pharmacology and Therapeutics.—In many of the universities the system of instruction in pharmacology and therapeutics is more specialized and more amplified than is the case in the United Kingdom. In addition to practical instruction in pharmacy and materia medica, lectures and experimental demonstrations are given on pharmacology. The lectures are given to the whole class, but for the demonstrations the class is divided up into small sections—in some cases not more than eight or ten men—and the fundamental experiments on the actions of drugs are shown. Optional or elective classes of a more advanced character where further experimental work is done are also common. Special instruction in therapeutics is given very frequently by a special lecturer or professor, and in some instances ward visits are attended, where the whole clinical instruction is devoted to the consideration of the treatment of the patients.

Examinations.

Upon the subjects of examinations Professor Bradford makes the following observations which it seems desirable to quote in full:

No very useful purpose can at present be served by comparing the examination systems in vogue in the States with those obtaining in this country, as the conditions are so entirely different in that the degree granted by the universities confers no right to practise; the latter is obtained by passing a State examination under the supervision of a special Board. In all the universities the manner in which the student has followed his courses of instruction is a determining factor in deciding whether he shall or shall not receive a degree. Further, it is very usual for the examination in each subject to take place at the end of the course of instruction in that subject, and hence the examination, particularly in what are called in this country the preliminary and early subjects, is to a large extent a piece-meal one. As regards the final subjects—medicine, surgery, and obstetrics—in some instances the student is examined in all at one time.

The fundamental and far-reaching difference between the American and the English systems lies in the fact that the record of a student's work, recitations, laboratory classes, ward work, is kept, and very largely, and in some cases almost entirely, determines the result. A very prevalent custom is not to admit him to the written or practical examination, often held at the end of a course, unless the report of his class work is satisfactory. Such written or practical examination when held is conducted by the professor himself, but the report of the class work is made by the instructor or demonstrator in charge. All the student's drawings, laboratory notes, clinical records of cases seem to be marked and pigeon-holed.

In many universities if the student is rejected in three branches he loses a whole year and the courses have to be repeated. It is difficult to form an estimate as to the number of students who fail, but in the leading universities the proportion would seem to be small compared with what obtains in England.

Conclusions.

Professor Bradford summarizes his conclusions as follows:

1. That the enthusiasm of the teachers and of the students was one of the most striking features of his visit.
2. All the leading universities had exceedingly fine, and in some cases magnificent, laboratories, and the equipment was of a high order of excellence.
3. In the teaching of the non-clinical subjects the laboratory and practical side was especially developed.
4. Systematic instruction by lectures seemed not to be in general favour.
5. Even in the final subjects (medicine, surgery, etc.) the teaching was extraordinarily systematized; but, speaking generally, the students did not have the clinical facilities they obtain in this country.
6. The scientific investigation of disease in clinical laboratories had reached a very high order of development.
7. The teachers in this country in such subjects as pathology might well consider whether some of the methods in vogue, such as the early study of bacteriology and the custom of giving the class unknown organisms and sections to identify, and the careful record of the students' work, are not features thoroughly deserving of imitation.

ON THE INTRUSION OF THE LAYMAN INTO MEDICAL PRACTICE.

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MEDICAL men who have taken up the study and practice of electro-therapeutics are much concerned in a question which also concerns the whole medical profession, and that is the invasion of this field of medical practice by laymen and the extensive support which is being given by medical men to the unqualified persons who undertake this and other forms of medical treatment by physical agents. The situation is growing rapidly worse. Electricity has always been exploited by charlatans of various species, and this state of things will doubtless continue, but medical treatment by electrical methods is now being taken up by chemists, by nursing institutions, by instrument makers, who undertake to carry out x-ray photography and x-ray treatment, and by syndicates, specially equipped for making money by the treatment of patients; and the feature which makes the situation a serious one is the way in which these persons and agencies are encouraged by members of the medical profession. Mainly in consequence of this encouragement we are confronted by an extensive invasion of an important sphere of medical practice by laymen who are deliberately taking up a branch of medical treatment as a means of livelihood. Some of these people seem to think that the treatment of the sick by electricity and other physical methods is a field of work into which they have a perfect right to enter. Take the following instance—last April I received a letter which bore signs of having been written by a person of education; and from it I take the following extracts, as they illustrate the situation very clearly. The writer says: "Dr. B. has kindly allowed me to use his name in writing to you for information in connexion with a course of lectures at St. Bartholomew's Hospital. I have explained to him my intention to open an electrical establishment in London, and my wish to take all necessary steps to become efficient before doing so. I should be much obliged if you would give me your opinion as to what training you consider necessary, and whether it would be possible for me—a layman—to obtain admission to your demonstrations on the subject of medical electricity at St. Bartholomew's."

In replying, I said that the teaching at the hospital was for medical men and medical students only, and that I was sorry to think that my correspondent proposed to start an establishment for unqualified medical practice; that it was unreasonable to expect me to assist in training persons for such an object, and that I thought the crowd of unqualified practitioners was already large enough. In his reply he said:

"I am thankful to you for your letter, as it will serve as an instance of what you must pardon me if I describe as the unreasonable attitude of mind taken up in certain quarters on this subject. I cannot but think that it is to the interest of the medical profession and science itself, that reasonable

encouragement should be given to specially-trained men who desire to work under medical direction. Of these there are several in London whose work and reputation for many years past are a sufficient answer to the imputation conveyed in your letter."

These letters clearly reveal the idea of their writer that a layman was fully entitled to embark on medical practice and treatment, an idea which causes him to consider my view that medical practice should be confined to medical men as an "unreasonable attitude of mind." It is also worthy of note that he was referred to me for advice by a medical practitioner. Another striking instance of the general attitude of medical men towards electrical work is afforded by the fact that a well-known firm of chemists of good standing has embarked upon the systematic treatment of patients by electrical methods.

Here is an extract from a letter from a well-known firm of chemists, written in reply to a medical man who wrote to ask whether they would treat a case of lupus. "We.....shall be pleased to undertake the treatment of your patient for lupus either by *x* rays or the ultra-violet rays. The former treatment we have generally found more successful, but can apply either to your instructions." Another letter from the same firm, in reply to another inquiry, is couched in similar terms. It states that the firm had had considerable success with the majority of their cases, and that any case entrusted to their care will be treated with the greatest skill and attention. In a further letter this firm enumerate a number of leading medical men in London who have sent them cases.

If medical men had had any proper feeling in this matter of unqualified practice and electrical treatment, this abuse would hardly have been allowed to grow up.

I have recently seen a letter addressed by a chemist to a medical man asking for instructions as to technical details and describing his methods of treating a case, presumably of uterine cancer, by a vaginal *x*-ray tube. Surely the treatment of a case of that kind is not a matter to be properly entrusted to a chemist, and yet the country abounds with chemists who are taking up *x*-ray photography and *x*-ray treatment.

The mistresses of nursing homes are also becoming imbued with the same desire to make money out of unqualified practice.

A little while ago I received a visit from the proprietor of a nursing home. She wished for my advice as to the setting up of an installation of electrical apparatus in her establishment. Her alleged reason for this was that her neighbours and competitors were all doing so, and she thought she must either follow in their train or fall behind, and so lose money.

Recently a booklet of a "nursing home" has been freely circulated. It contains price lists of fees for courses of treatment for non-resident patients by high frequency, by *x* rays, by light rays, by radium rays, and even by radio-active thorium emanations. Surely this extensive programme is rather more than should be undertaken by a nurse. Is there a "nigger in the woodpile" in the shape of a medical man touting for work behind the nurse's cloak?

In this country a few inconsistencies more or less do not arouse much interest unless attention is pointedly drawn to them, but in this particular matter of the transfer of electrical treatment to laymen the medical profession must needs be interested. An inconsistency, which seems to me to be a glaring one, is the following: The unqualified assistant has been ruthlessly exterminated with all the rigour of the law. In his day he worked under the close supervision of his chief, attending mainly to minor points of medical practice, and was subject to punishment by the loss of employment if he did wrong. Is it not an abandonment of the principle for which the unqualified assistant was sacrificed to countenance the unqualified electrician? Nowadays the unqualified electrician is flourishing by the support of medical men who have no close control over him, who are generally unable to prescribe the details of what they wish to be done with any accuracy, nor to form any proper judgement as to the manner in which their instructions are being carried out.

The notion of medical practice for medical men is simple and comprehensive, but its importance is not yet fully grasped by the members of the medical profession. Quite the reverse. There are plenty of members of our profession who support unqualified electrical operators. I believe that the majority of the electro-therapeutic work done in London is done by laymen. I hear of it continually.

Here is a case of some interest. A medical man with considerable experience of *x*-ray therapeutic work was consulted

by a patient suffering from rodent ulcer. The patient said that he had been under the care of a gentleman who is surgeon to a large London hospital which has a good electrical department. He further said that the surgeon advised *x*-ray treatment, and recommended him to apply to a firm of chemists for the treatment of his case. The patient did so, but without benefit, and therefore came to ask my informant to undertake his case; further, he asked for a reduction of fees on the ground that he had been already put to great expense for the treatment given by the chemists.

A few years ago a physician, writing on medical electricity, indulged in a sneer at the expense of medical men practising electro-therapeutics, by suggesting that they were more versed in the intricacies of their apparatus than in the knowledge of anatomy and physiology. Where are we now? The knowledge of the intricacies of the apparatus seems to be the only thing looked for, by those at least of our profession who support the unqualified electrician.

In my opinion the least skilled medical man is to be preferred to the most elaborately equipped of institutes or of lay electro-therapeutic operators, simply because he is a medical man, has had the education of a medical man, and feels the responsibilities which belong to every right-minded medical man. The conversion of medical electricity into a branch of work for electricians would be the greatest possible mistake in the public interest.

It is often said—though chiefly by badly-informed persons—that the equipment of the unqualified operator is so much better than that possessed by the medical practitioner, that the latter must be at a hopeless disadvantage. I mention this in order to contradict it. It is not true for one moment. There is no genuine or useful electrical appliance which is not possessed by the medical men who practise electro-therapeutics. If the unqualified man has nickel-plated knobs to his instruments, where the medical practitioner is satisfied with plain brass, does that make the former apparatus any the better? Good modern electrical apparatus is made to regular patterns and can be bought ready-made at the instrument makers. Judging from what little I have seen of the interior of the unqualified man's treatment rooms, and from photographs of other places, which have been shown to me, I can unhesitatingly contradict the statement that the unqualified men have any monopoly of the best things.

It must also be remembered that the consequences of electrical applications in the hands of non-medical persons may be disastrous. I have authentic information of a fatal *x*-ray burn produced in the treatment of cancer by an unqualified operator. Some time ago I was called to give evidence at an inquest upon another case in which the taking of *x*-ray photographs by a photographer had resulted in a burn to the patient which ended fatally.

The effect of the neglect of electrical methods of treatment in this country is already reacting very unfavourably upon the medical profession itself. Consider the electrical departments of the larger London hospitals. Are they a credit to the hospitals or are they not? Emphatically they are not. Men of the best stamp—men, that is, of the class who are willing to take up work in other special departments of hospitals—are unwilling to take up electro-therapeutic work because they do not find its status good enough. They are almost afraid even to be associated with electro-therapeutics.

It is a deplorable thing that medical men should fear to identify themselves with medical electricity lest it might injure their professional prospects. To practise electro-therapeutics in a proper manner requires not only a knowledge of anatomy and physiology, of medicine and of surgery, but also a knowledge of physical science such as is possessed by very few medical men. Electricity renders indispensable assistance to all branches of scientific medical practice, and its applications are growing greater every year. Medical electricity as a field of work calls aloud for the best possible type of trained medical man. If medical treatment by electrical methods is to be handed over to any kind of lay operator, its development is certain to suffer seriously, because the right kind of man will be deterred from touching it.

Mr. Morgan, in his presidential address to the Medical Society in October, 1900, has expressed exactly the same opinion. He says: "The further development of *x* rays in surgery and medicine is a study which I should like to see appropriated by members of the profession. I believe that it is still in its infancy, and that there is a great future before it. But, in order that we may obtain the full advantages of

its resources, it appears to me that the study must be pursued by men having a thorough medical training, and must not be allowed by them to fall into the hands of mechanicians, lest its progress as a scientific aid to diagnosis be checked. I heartily commend it as a new form of speciality to those who have time and opportunity to pursue this entrancing study."

To show that the condition of our London electrical departments leaves something to be desired, I will quote an extract from the official bulletin of the French Society of Electro-therapy for the month of July last. It is contained in a letter addressed to the Secretary of the Society by a delegate who was asked to report on the position of electro-therapeutic work in England. He says of one of the large London hospitals: "The electro-therapeutic department seemed to me to be somewhat primitive in its organization and in its apparatus, and I have doubts of its being of any great utility."

At another large London hospital with a medical school there is no electrical department, and this appears to be partly due to the fact that the staff have been unable to induce any suitable man to take it up. In others the electrical department is in an imperfectly-developed condition.

X-ray photography and x-ray therapeutics are entrusted to lay operators at several of the London hospitals. This, I think, supports my contention that where electricity is concerned the medical profession is a little careless of its rights and its responsibilities. It does not seem to me that a proper degree of consideration is shown to patients, however humble they may be, if they are made to uncover themselves and expose their infirmities before a lay operator under the false impression that they are in the hands of a duly qualified medical man.

In considering the position of affairs there is a point which should not be lost sight of, and that is that there is a distinction between the common charlatan and the more or less trained electrician who carries out treatment under medical orders. Unfortunately, the latter class tends to shade off into the former, and it is not always easy to recognize much difference.

Our difficulty to-day is not so much the old—and still present one—of the common impostor, but a new difficulty of the voluntary surrender of medical work to laymen. In considering this matter we must not be too ready to impute prejudice or any other unworthy motive to the medical men who employ the lay operators. I am sure that the harm done is often due to thoughtlessness or sheer ignorance. I saw a letter only last week, written by a medical man in the country to another in London. The writer said that a patient of his had fallen into the hands of an unqualified electrician in London, and asked for advice as to how to extricate him. He did not know, he wrote, of any medical man in London practising in electro-therapeutic work to whom his patient might be entrusted. The profession at large does not know that there is any systematic study of electro-therapeutics by medical men. They do not know who is a competent exponent of this branch of therapeutics or who is not. They read the copious advertisements of the numerous electrical institutes, they see the phrase "solely under medical direction" which these establishments use so lavishly, and they take for granted that things are all right. The fact is that the present state of affairs is the natural result of the low esteem in which the subject of electro-therapeutics is held in this country. That may have been pardonable twenty years ago, but electricity has made advances since then, and its medical applications have also advanced very notably.

It is high time for the medical profession to awake to the fact that electro-therapeutics demand serious attention, that many applications of electricity are of great value in medical practice, and that the carrying out of electrical treatment for the sick is a matter for medical men and not for irresponsible laymen.

It is much to be regretted that the Council of the British Medical Association should have disallowed a subsection for electro-therapeutics at the annual meeting this year, particularly after the holding of a successful subsection in the subject at Swansea in 1903.

In order that members of the medical profession may realize the extent to which unqualified practice in electro-therapeutics has spread I venture to bring forward the following instances of the circulars which are being sent out more or less indiscriminately:

i. An extract from a letter dating from Cavendish Square: "Dear Sir,—I beg to inform you that I have, at the suggestion of several leading medical men for whom I work, opened

a branch establishment at the above address. My many years experience enables me to deal with all cases that are suitable for mechanical and electrical treatment."

2. A circular, with illustrations, dated from Elizabeth Street, Eaton Square. In it I find the following: Marvellous results. Roentgen rays, high frequency, Tesla, Finsen. Skin diseases, lupus, etc., radically cured by iron light. Paralysis, etc., treated by perfect electro-medical appliances. Skilled male and female operators.

The addresses of branch establishments are given.

3. Another from Woodstock Street, London, W., says: "We have on our books an efficient staff of hospital-trained male and female nurses.....They can be employed by either doctor or patient. We treat patients by ultra-violet lamps for the profession."

4. In a circular with prices, an x-ray photograph of a hand, and a card from a "Member of the Roentgen Society, X-ray Specialist," I find the following: "I have recently installed the best and most up-to-date appliances, thereby ensuring satisfactory results with short exposures, and without risk of the dermatitis which hitherto has been the only drawback in connexion with the use of x rays."

"X rays now being so largely used therapeutically as well as for diagnosis, I propose to devote my services exclusively to the medical profession for these purposes."

5. The illustrated circular of a Swedish Institute in Harrington Gardens, S.W., offers many forms of medical treatment, and includes the following: "Physico-therapeutic treatment of muscular and nervous diseases." "Electro-therapie, galvanic and faradic electricity, electric baths."

6. Recently a prospectus was circulated of The Light Cure and Electro-Therapeutic Institute, Limited, capital £12,000. It had four directors, none of whom belonged to the medical profession. Among its objects were enumerated the provision of "light-cure" treatment. Its installation will include "Finsen light, Roentgen ray, high frequency, vibratory and electric massage, hydro-electric, static, galvanic, faradic, and other forms of electric treatment."

7. The Electrical, Ozone, and Light Treatment is a concern which has been in existence for some time. In its advertisements rheumatism, sciatica, neurasthenia, dyspepsia are specially named, and it is stated that "currents of high potential and great frequency are passed into the system," while "expert masseurs attend patients, who are only received on the authority of their medical man."

Another prospectus recently issued is that of the Kroeger Light Cure and Electro-therapeutic Institutes, Limited, with a capital of £15,000. It has three non-medical directors. The managing director is Herr Martin Kroeger, "Electro-therapeutist," and it also gives the name of a consulting physician and surgeon. Its objects include the acquisition from Herr Kroeger of four institutes, three of which are in London and one at Eastbourne, and the making of arrangements for carrying out any form of medical, dietetic, hygienic, or other treatment of disease.

Another institution is "The Red Cross Light Cure and Electrical Institute" for the modern treatment of disease by electric light and vibration. "Consultations and Roentgen-rays examinations free." "Patients treated under the supervision of their own medical man if desired. Or a qualified medical man can always be consulted at the Institute."

ILLEGIBLE PRESCRIPTIONS.—It is stated that in view of the commonly illegible writing of medical men, the Minister of the Interior of Prussia has issued an order forbidding chemists to dispense medicines upon prescriptions any part of which is not perfectly clearly written, in default of explanations thereof being obtained from the prescribers. They are also instructed to write the name and address upon each prescription of the person by whom the medicine is intended to be taken, if this has not already been done by the prescriber.

THE CIGARETTE HABIT IN CANADA.—A resolution was moved in the Canadian House of Commons, on March 23rd, with the object of prohibiting the importation, manufacture, and sale of cigarettes, the consumption of which in Canada has enormously increased during the past few years. The resolution having been opposed by the leaders of both sides of the House no vote was taken upon it, and the subject is therefore at present shelved. Last year a similar resolution was passed by a large majority, but owing to some irregularity in the way in which it had been framed it was subsequently ruled out.