and its cause were so long unrecognized in both these cases that they gain a certain interest.

J. B. C., then a small girl of nine years of age, running, late to dancing school, felt a sharp pain near the left knee. There was a wound, and she went to a doctor near by, who put on a dressing. For three weeks she went about work and play, active, but unhappy, and showing, throughout, an amount of lameness and of nervous upset out of proportion to the wound, which wound everyone supposed had been made by a foolish little dance-program pencil that was dangling from her belt. After three weeks an x-ray was taken. Figure 1 tells the whole story! The pencil fragment shown in Figure 2 was removed; the wound healed promptly, and that is all, save for the scar.

B. C., aged 34, got into an "argument" and got punched a "couple of times." Some weeks later he was sent to me by Dr. N. N. Levins, with an incomprehensible tumor of the face. There had been a trifling wound near the chin, long since healed. Naturally, I assumed an infective origin of the tumor, sent him into the hospital, opened up inside the mouth, and found no adequate cause for the massive infiltration, nor was there any delay in the closure of the wound. I had ordered an x-ray at the hospital but, as sometimes chances, no plate was forthcoming. He reported to me at the office five days later, and it was evident that we had not reached the cause of the trouble. Figure 3 shows why. A second operation resulted in removal of the pencil fragment from deep in at the back of the cheek, and, not without a difficult search,—in removal of the rubber eraser end, imbedded more deeply, and that was all of that.

Mr. C. assured me he had no pencil in his mouth or in his hand at the time of the disagreement, nor did his adversary show a pencil,—or any academic tendencies that might imply pencil carrying.

These cases are curious, surely, and give what may become a classic x-ray picture of a dangerous, penetrating weapon, previously unrecorded and unrecognized, so far as I have noticed.

The New England Surgical Society

PRESIDENT'S ADDRESS.*

MEDICAL EDUCATION AND THE MEDICAL SUPPLY.

By JOHN M. GILE, M.D., HANOVER, N. H.

EVERY occupation is interested in the means by which its members are recruited. In other

words, in the method of education by which it is perpetuated. In the case of the medical profession the public is likewise, directly, though perhaps unconsciously interested. Their interest is in having an ample supply of well trained men, if it is an oversupply so much the better. The members of the profession may desire to consider the means of keeping the supply at a fair average, and so may be interested in its limitation as well as its production.

It may be of value to review for a moment something of the history of medical education in America and to consider briefly what the supply is at the present time and what its prospect is for the future.

Someone has said that the chief recreational exercise of an old man is found in changing his last will and testament. There seems to have been a period in medical education in America when the chief recreation of physicians must have consisted in founding medical schools; and the process was a very simple one, the only requirement was to secure a charter and hire a hall and forthwith a new medical school was in existence. The states appeared to take pride in this multiplication of institutions of higher learning within their boundaries, so charters were secured without difficulty, halls seemed to be abundant and the process went merrily on.

In the northeasterly group of states, the period was, roughly speaking, from 1830 to 1880. In the South and West, it began between 1860 and 1870, and continued until about 1900. The New England states, however, were the least serious offenders in this direction. Massachusetts appears to have had, at different times, eleven medical schools chartered, five of which are still in existence; though, I suppose most Massachusetts physicians are not enthusiastic about the so-called College of Physicians and Surgeons and the Middlesex Medical Institute. Vermont has had six schools organized of which five are extinct. Maine has had three, all now gone out of existence,—the very excellent and substantial school at Bowdoin having announced discontinuance with the close of the last college year. In Connecticut, there has been but one such foundation, the present Yale medical school. Rhode Island, also organized but one, which was for a time connected with Brown University. New Hampshire had three, two of which were apparently stillborn and had no graduates; while the Medical Department of Dartmouth now gives but the first two years of the medical course. New York, on the other hand, has a record of thirty-five medical colleges, twenty-seven of which are extinct. The banner state of the country appears to be Missouri where forty-four medical schools have been organized, six being still in existence. Illinois, Georgia,

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Indiana, Maryland, California, Tennessee, Iowa and Ohio, all run to high numbers.

The northern and eastern states had very largely corrected this ludicrous situation, before the influence of the Council of Education of the American Medical Association began to be felt, but through the south and west the schools above referred to existed in large numbers until the public opinion and legislative action created by the Council, forced them out of existence. At the present time eighty-five medical colleges are receiving and instructing students within the limits of the United States and three hundred and sixty-six have become extinct.

Obviously, such a mortality in these institutions must be having a marked effect on the medical supply of the country. Are we as a result facing a dearth or was the previous condition one of impossible oversupply?

Let us consider the situation more in detail as it relates to New England. Twenty years ago, the New England schools gave the degree of M.D. to three hundred and thirty-three men. In 1920 the existing schools gave degrees to two hundred and twenty-four men; ten of this number were graduated at Bowdoin, above referred to as suspended. This gives us thirty-two per cent. less of medical graduates in 1920 than in 1900. The medical supply of New England, however, has in the past been drawn in large measure from New York and Maryland. In 1900 these two states gave medical degrees to something over nine hundred men, in 1920 they gave but six hundred and forty medical degrees, very close to the same percentage of decrease as had occurred in New England.

It was apparently expected by those who were urging the discontinuance of many of the schools that those remaining would materially increase their output of graduates. A report of the Carnegie Foundation advocated that the medical departments at Harvard and Yale Universities should supply all the medical men needed in the New England States, but these schools have not felt that it was wise to greatly increase their student numbers. They have, in fact, limited them to a smaller number than formerly, with the result that in 1920, these two schools graduated but one hundred and fifteen men; very obviously a number that would fall far short of taking care of the medical necessities of New England.

Contemporaneously with this decrease in the output of medical graduates the population has had a rather rapid growth. The census figures for 1900 gave a total population in New England of five million, six hundred thousand, while in 1920, the figures are seven million, four hundred thousand, an increase of two million, eight hundred thousand. During this time the physicians had increased from ten thousand and eighty-three to ten thousand, eight hundred and six, the percentage of physicians to popula-

tion in 1900 being one physician to every five hundred and fifty-four of the population and in 1920 one to every six hundred and eighty-five of the population.

This latter figure, namely, one physician to every six hundred and eighty-five of the population, does not sound as if there was a lack of medical men. These statistics, however, do not give quite a correct statement of actual conditions. They are taken from the directory of the American Medical Association and many names appear there that no longer represent active practitioners. Some are in other occupations and some, by reasons of age or other physical inability, have ceased practice. Dr. Duncan, secretary of the state board of health of New Hampshire, who has recently made a survey of the medical situation in that state, figures about ten per cent. less active doctors there than appear in the medical directory. If this holds true for all New England, we should decrease our number of physicians to ten thousand and eighty and our proportion would stand 1 to 734 of population.

But even these figures do not present a grave problem. It is the tendency to a change in the distribution of physicians that should make us take thought. In 1900 there was in Boston one physician to every 325 of the population and in 1920 the figures stood one to every 350 of population. A change of very slight importance; but in the more northerly of the New England states, Maine and New Hampshire, the proportion in 1900 was one physician to 530 of population while in 1920 it was one to 700. In New Hampshire, there had been an actual decrease of 100 in the number of physicians, with an increase of something over 30,000 in the population.

In the large rural districts it is very difficult to give a proportion between physicians and population that will indicate the actual fact, the over-lapping practice from town to town making figures unreliable. There are certainly, however, large areas in which the populations run as high as 800 to each physician and much of this population lives far from the nearest doctor. I know of many flourishing hamlets of considerable size that are distant all the way from ten to thirty-five miles from the nearest physician and, with such distances to take into consideration, it is, of course, much less easy for one man to look after the health of a given number of people than were the same population situated within a radius of a few miles.

A still more significant factor, however, is found in the average age of physicians in different communities. To illustrate, in Boston, the average age is forty-four years and in Manchester, New Hampshire, forty-seven years, while in the small towns in New Hampshire of two thousand population and under, the average age is fifty-two years. This indicates very

definitely where the young men are going, namely to the large centers of population.

With the more stringent educational requirements that are steadily being called for, the average age of all medical men is high and the number of years of active practice is proportionately diminished. But this very high average for the country districts certainly presents a problem, and a problem that is common to all of New England.

These men of an average age of fifty-two, as just noted, are sufficient in number at the present time to control the situation, but that very age indicates how little new blood is coming in to fill their places. These are the men who came to the country districts of New England in the eighties and nineties and the first years of the present century; a time when there were many more medical schools than at present and when the schools still existent were graduating more men than now. They were men who for the most part, went directly from the secondary schools to the medical college, without collegiate training and the medical schools were often mediocre or inferior—certainly very inferior to the medical schools of today, but after long years of constant work with these men, I wish to give my testimony to the generally high standard of ability that prevails among them and still more emphatically to commend their faithful, conscientious attitude in relation to their patients. There appears to be something in the profession that gives keenness of observation and a broad humanity even to men whose preliminary training has been insufficient, and no more valuable or conscientious servants of the public can be found in any occupation.

With this medical group in the country districts of New England, now past an average of fifty years of age, where are to we look for their successors? The young man entering the profession today has had at least two years, and in many instances a full four years, in a college of the liberal arts. He has then taken his medical course in some large city center, and even though he may have been born a country boy, the country and the things of the country have grown dim. The cost of his education has been great, the lure of the city has filled his mind and scarcely a thought of a country practice enters it. While to most men who are city bred the country appears insignificant. The great mass of the city with its dense population looms so large that the scattered dwellers of the country seem unimportant, but we must remember that the men and women of the great open spaces represent the basal industry that is still the great bulwark of our national prosperity and that without them the cities, too, must die. I commend to you Knut Hansun's most recent book, "Growth of the Soil."

The figures we have considered seem to force us to the conclusion that the medical situation

in our country districts will soon be a serious one, and of these figures, the age average is the most significant. Suppose a manufacturing industry should discover that the average age of its employees was fifty-two and that their number, in proportion to the work to be done, was steadily decreasing. We can assume that pretty energetic measures would be taken to find or make a new source of supply. If, in addition to this, the occupation required a high school education and at the very least seven additional years of technical training before any productive work could be done the proposition would look pretty hopeless. Yet this is exactly the situation that confronts us in relation to the rural district medical supply. It is a supply that we cannot go out and recruit from the highways for it requires the longest and most expensive training of any occupation. No short cuts are possible for the law of practically all states demands the minimum mentioned.

There are, it is true, certain offsets that help to compensate for the decreasing number. The automobile enables the man with a widely scattered practice to double or treble the work he could do with horses, but in all the northern half of New England there are four or five months of the year when this method of conveyance is impracticable. The trained nurse may, in some cases, make one call a day suffice where, without her, two would have been necessary. The many small hospitals materially lessen the work in many instances. But none of these things, nor all of them put together, overcome the menace of the passing of the country doctor.

Requests frequently come to the faculties of medical schools to supply physicians for country towns and the State Board of Health of New Hampshire is constantly besought to furnish medical men for such communities. Many of these towns even suggest subsidizing a man if he can be found. This suggestion may be, in fact, a solution of the problem but it carries with it a very undesirable yet probable sequence. If the towns embarked on such a program it would not be long before the question of state aid would arise and thus a long step would be taken toward the socializing of the profession or state medicine, a step that we all believe would be disadvantageous both to the public and the profession.

A point where the state might come in helpfully and without the evil above referred to would be in the more frequent establishment of laboratories outside the cities, laboratories situated at such intervals that the practitioners of the district would actually go to them with some frequency and discuss the laboratory findings with the laboratory man, such a discussion often illuminates a case as no formal report on a printed blank can do. True, this would not increase the actual number of clinical men, but it would give them more time for their

actual clinical work, make them feel that they were more up-to-date, and be in every way an encouragement to better medicine. With the training given in the schools today the practitioner is, of course, supposed to be able to do all of his routine and even some of his rather highly technical microscopic and chemical work, but there is no sadder sight than the so-called laboratory of the busy practitioner. And he is not to be criticised, for the man who has driven with a horse thirty or forty miles on a cold winter day is in no frame of mind to clean slides and test tubes and look with discriminating eye through a microscope. How much do the clinical men here know of the working details of the laboratory? We do well if we can keep pace with its constantly changing technical jargon.

But, assuming increased laboratory facilities, we have not yet solved the problem of the medical supply for the rural districts, and, in some way, the medical schools must find the answer.

The work of the Council on Education of the American Medical Association deserves the highest commendation both from the public and the profession. They have raised our standard of education to a point where we no longer have to apologize for it; but in the process it has become concentrated in the large cities and into relatively few schools. The result of their location is a city trend of the graduates, while the limited number of schools have not, as expected, increased their facilities for the admission of all properly equipped applicants but are making rigid numerical limitations. But even if the existing schools were ready to take all applicants, there is a certain advantage in their more even geographical distribution. Even more than the laboratories they become centres that result in better practice by the physicians over a wide area around them and their graduates are much more likely to consider some outlying country district.

If one of the medical schools of Massachusetts were located in Worcester or still farther west, in Springfield, I believe it would be to the advantage of Massachusetts. The trustees of Dartmouth College apparently have no desire to restore the last two years of its medical school, but New Hampshire would be benefited thereby, while the discontinuance of a school so strategically located and so intrinsically sound as Bowdoin is an educational tragedy.

Restorations or new foundations is the answer to the problem of the rural medical supply. Some views of medical education regard such suggestion as heretical, but the next twenty years will prove the contention valid.

RECENT DEATH.

DR. LESTER BURNSIDE LE GRO, a Fellow of the Massachusetts Medical Society, died at his home in Bradford, August 18, 1921, of diabetes, aged 55. He was a graduate of Baltimore Medical College in 1905, and practised laryngology, rhinology and also dentistry.

THE RESULTS OF THE EXAMINATIONS OF CANDIDATES FOR MEDICAL LICENSURE IN MASSACHUSETTS IN JULY, 1921.

COLLEGE OF GRADUATION	NUMBER OF APPLICANTS	ACCEPTED	REJECTED
Mass. College of Osteopathy	11	5	6
University of Vladimir ...	1		1
Middlesex College of Medicine and Surgery	19	11	8
Univ. of Constantinople ..	1		1
Univ. of Naples	1	1	
Univ. of Maryland	1	1	
Am. School of Osteopathy .	2	1	1
College of Physicians and Surgeons, Boston	5	2	3
Tufts College Med. School	60	56	4
Kentucky School of Med...	1		1
Baltimore Medical College	1	1	
College of Med. Evangelists	1	1	
Columbia Univ. College of Physicians and Surgeons	3	3	
Univ. of Southern Calif....	1		1
Univ. of Penn. School of Medicine	1	1	
Long Island Coll. Hospital	1	1	
Medical School of Harvard University	28	28	
Chicago Coll. of Osteopathy	1	1	
Kansas City Univ. of Physicians and Surgeons ...	1	1	
Boston Univ. School of Med.	8	8	
Univ. of Vermont	1	1	
Jefferson Medical College	1	1	
Phila. Coll. of Osteopathy	1	1	
Bellevue Hosp. Med. Coll.	1	1	
Coll. of Physicians and Surgeons, Los Angeles	1	1	
Johns Hopkins University, Medical Department	1	1	
Univ. of Maryland and Coll. of Phys. and Surg.	1	1	
Emory Univ. School of Med.	1	1	
Detroit Coll. of Med. and Surgery	1	1	
Georgetown Univ. School of Medicine	1	1	
Laval Univ. Faculty of Med.			
Quebec	1		1
Univ. of Toronto, Faculty of Medicine	1	1	
TOTAL	160	133	27

The Massachusetts Medical Society

A stated meeting of the Council will be held in John Ware Hall, Boston Medical Library, Wednesday, October 5, 1921, at 12 o'clock, noon.

Business:

1. Nominating Committee nominates and Council elects an orator for 1922, in place of orator elected last May, who cannot serve.
2. Reports of Standing Committees.
3. Petitions for restoration to fellowship.
4. Appointment of delegates to annual meeting of Vermont State Medical Society at St. Albans, October 13 and 14, 1921.
5. Appointment of Auditing Committee.
6. Report of delegation to House of Delegates, American Medical Association.
7. Reports of Special Committees and delegates.
8. Fill Vacancies in Committee of Arrangements.
9. Incidental business.

WALTER L. BURRAGE, *Secretary*.

Boston, September 28, 1921.