

this occurs in this secondary manner, it is after the vaccinia has been produced, and it does not, as is sometimes claimed, interfere with the protective power of the vaccination. The resulting sore should therefore be treated antiseptically from that time on, and healed as soon as possible.

Dr. Cutler, at the head of the New England establishment, maintains that a small vesicle should always be obtained, and that, from the commencement, it should be kept as dry as possible, no moist or oily dressing ever being used. A small vesicle produces less inflammation — and so less necrosis of subjacent tissue, less areola, and so less constitutional disturbance. Moreover, it is far less liable to crack and rupture. He claims that the size and accompanying characteristics of the vesicle may be absolutely determined by the size of the original scarification, which had better be a mere puncture, and never should exceed one-sixteenth of an inch in diameter. There should be two or three of these vesicles situated nearly two inches apart, so that they may never become confluent with one another. He exclaimed, "It was a bad day when we were taught to scarify instead of the old-style puncture." His explanation of this and of his theory that a large scarification makes a confluent and highly inflamed vesicle is, that, while it is necessary to spread the inert virus obtained from calves over a large scarification, to get any result — uncertain at best — the lymph obtained from mature animals is richer in germs which become implanted all over the scarification and start numerous colonies, each a nucleus of vesicles which, as they grow, coalesce until they form the large confluent vesicle.

When a large confluent vesicle is produced in the human subject, the resulting cicatrix often fails to present the minute pits which the older vaccinators considered characteristic of successful vaccination, but this is really of no importance. In the human subject vaccinia produces a deeper inflammation than in the cow, and this fact, taken in connection with the high degree of inflammation produced by a large confluent vesicle, accounts for the necrosis of tissue which destroys the natural base of the vesicle with its characteristic pits. The simple appearance of a cicatrix affords no evidence as to the amount of protection. A cicatrix is only presumptive evidence of previous vaccination, and, if it is more than five years old, vaccination should be done in the presence of an epidemic. The only real evidence of protection is the insusceptibility to vaccinia under the most favorable conditions. Insusceptibility to vaccinia under such conditions is insusceptibility to variola. In the early history of vaccination some bold experiments were made at the small-pox hospital established by the Boston Board of Health at Noddle's Island. Massachusetts, by the way, was the first colony to introduce small-pox inoculation, and the first State to introduce kine-pox vaccination. "On August 16, 1802, 19 boys were vaccinated, and all passed through the regular stages of the cow-pox; and on November 9th following, 12 of them, together with the son of Dr. Bartlett, who had previously had the cow-pox, were inoculated for the small-pox with matter taken from a patient in the most infectious stage of the disease; and no trouble whatever followed." These facts are given in a report signed by eleven physicians, including Benj. Waterhouse and James Lloyd. A full and official account of the affair is found in the *Columbian Centinel*, December 18, 1802.

The formation of the areola is claimed to be the only test of constitutional or protective vaccination. If a person has been infected with small-pox, vaccination will not modify the disease unless the areola forms before the small-pox symptoms show. If, however, the stage of areola is reached before the symptoms of the graver disease appear, that disease will be aborted or modified by the vaccination.

Distinct, probably, from the various post-vaccinal eruptions which are sometimes called into activity by the excitement of vaccination, is a more or less widely distributed exanthem, or roseola, which is claimed to be simply a distributed areola, and need give rise to no anxiety, since it runs the same course as, and disappears with, the areola.

In conclusion, your committee are inclined to believe, from the limited observation which they have been able to make, that the New England virus is the more active and therefore the more dangerous virus to use; that the Martin virus is not as active and consequently may be the safer for general use. In reference to this, the New England people state that the danger of excessive result should not be laid at the door of active virus, which is necessary to fight an epidemic with, but is due to the ignorance of the proper technique of vaccination among some members of the medical profession, and especially among laymen who often do not hesitate to perform the operation. On the other hand, the late Dr. H. A. Martin has maintained that the serum from the large confluent vesicle on the cow, with its higher degree of inflammation, is alone responsible for the greater degree of irritation in the human subject. Your committee believe that these points can only be settled by a more careful attention, on the part of physicians, to the technique of the operation, and an observation of subsequent results.

Further, your committee are led to the positive belief that the whole subject of preparation of vaccine stock should not be left in the hands of rival commercial companies, but should be wholly under the official control of either city or State.

WHAT MIGHT BE DONE BY THE OBSTETRICAL SOCIETY TO ADVANCE THE TRAINING OF NURSES.¹

BY A. WORCESTER, M.D., WALTHAM.

In the successful management of obstetric cases much depends upon the nursing service. Indeed, in normal cases, more depends upon the nurse than upon the physician. And in abnormal cases, especially where surgical interference is exercised, after the operation or the delivery is over, then even more responsibility falls upon the nurse for the happy uninterrupted recovery of the patient. If, to this is added the responsibility of starting a baby on a prosperous career of health and happiness, it would seem as if the monthly nurse always ought to be at least an angel. Sometimes she is one: sometimes she — isn't.

If obstetricians have poor or only tolerable nurses, it is their own fault: if they submit their patients to positively bad nursing service, then their fault is inexcusable. In other words, the physician is not blameless if his patient suffers from faulty nursing.

This particular responsibility of the doctor is of comparatively recent origin, and is due to the fact that

¹ Read before the Obstetrical Society of Boston, March 10, 1894.

within the last few years the profession of nursing has been revolutionized.

Monthly nurses used to be expected to know everything about mothers and babies. They did just as they pleased. They followed the suggestions of the physicians, if they saw fit to do so. Among these old-time nurses were many whose long experience, whose sterling common-sense and unfailing devotion entitled them to far greater rewards than they ever received. Some few of these old nurses or of their legitimate descendants may still be found in the old-fashioned households. But their type is fast passing from the stage.

In their place have come young women who have *studied* nursing. How contemptuously would the real old-timer have spoken of a *student* nurse! And how densely ignorant she would have seemed to the modern training-school graduate! Neither could understand the other. The revolution in nursing is complete.

With the old nurse the doctor's responsibility for the nursing service was very faint. She would brook but little criticism. Her unfailing defence lay in her silence. She would report only what she chose to report, and whatever happened she would never acknowledge her ignorance. Indeed, had she done so, her usefulness would have been abridged, for her families took comfort in her supposed infallibility. And much of the uncouth traditionary household physiology and pathology of to-day has its origin in the speculations of the old monthly nurse.

With the modern nurse, on the other hand, the doctor's responsibility as to the nursing service is like that of the captain for the safety of his ship. Both are alike responsible for the execution of their orders. The modern nurse recognizes her position to be that of an executive officer: and when she is working under a physician who so recognizes her position, then all goes well. Where the modern nurse fails to give satisfactory service, the failure is generally due either to her improper training or to the inexact and unintelligible orders under which she was working. In either case the failure is primarily the physician's. For it is his business to train his nurses, or at least to secure trained-nurses for his patients, as it is also his business to give his directions in such exact intelligible fashion as will effectually prevent any misunderstanding.

Of course, it is possible that the failure of satisfactory service is due to the nurse's personal unfitness for her work; but, even so the physician is not free from accountability, for he ought to know the characteristics of his nurses and their fitness or unfitness for his different families and patients. The physician must apportion their service, just as a general must, by taking into account his subordinates' special fitness for various positions of responsibility. The personal equation nowadays is of constantly increasing importance. This is the age of specialists, and nurses equally good in all kinds of work and under all sorts of conditions are not to be found seeking employment.

If I am right in thus stating the responsibility now resting upon the medical profession as regards the nursing of their patients, it must be admitted that this responsibility is not generally acknowledged. Many physicians still scold about their nurses. Few take any pains to improve them, or take any interest in the methods of training. In short, the revolution in nursing has not yet penetrated the apprehension of such physicians.

My object in asking the attention of this Society to this subject is to enlist the coöperation of all who are interested in advancing the new movement. It is high time that concerted efforts should be made to secure, first, more trained nurses; second, better trained nurses; and, third, a more serviceable working relationship between doctors and nurses.

In this paper I purpose to consider especially the subject of obstetric nursing. Let us then, first, inquire how the supply of monthly nurses may be increased.

It is, of course, plain that the training schools of the lying-in hospitals cannot more than begin to supply the demand even of their immediate vicinity. When the birth-rate of the community is considered in comparison with the possible number of such graduates, it is only too apparent that not one out of every ten confinement cases can be so cared for.

Where the supply is so limited high wages rule, and only the rich can afford to employ trained nurses; accordingly physicians whose practice is mainly among the wealthy do not appreciate the scarcity. But women of moderate means, and of no means, need trained nurses just as much, if not more, than do their wealthy neighbors. Moreover, the physicians who attend such women in their confinements need the assistance of trained nurses.

The problem thus becomes one of economics at the very start. Its solution is not impossible. For just as is the case with physicians, so it should be with nurses: the poor now receive their medical attention at the hands of beginners or as a direct charity, and so they must receive their needed nursing service. Families of moderate means employ medical attendants who are willing to work for moderate fees. As these physicians and surgeons acquire greater reputation they take new patients only for increased fees, and so it goes on until only the very rich or those suffering from some pathological rarity can enjoy the privileged service of the very distinguished practitioners. So it must be with nurses. In a properly adjusted system of training, student nurses would practise, under the direction of their teachers, among the poor and those of moderate means. Immediately after graduation, instead of demanding at once the highest wages, they should expect to work for moderate pay among those who cannot afford more; and only after several years of increasing experience should trained nurses expect the highest wages.

At present the nursing profession in matters of compensation is too much like the clerical, where experience and proved usefulness count for little against youth and "brilliant promise."

It is, therefore, in this solution of the economic problem that we may discover how to increase the number of trained nurses. Not by increasing the lying-in hospitals, however desirable otherwise that may be, but by utilizing the opportunities for training that now surround us in the homes of the poor and of those moderately circumstanced. Thus, too, may be secured better nurses, and also that final desideratum—a more serviceable relationship between the two professions.

Until recently it has been held that nurses could be trained only within hospital walls. Whereas the truth is that nurses so trained begin their private practice under great disadvantages when compared with others, whose training has been in part in the private practice of their instructors. And in recognition of this fact,

many of the best training schools have already arranged to send out their student nurses to private work for a part of their training.

Meanwhile, the special problem before us is to arrange for the instruction in obstetric nursing of the hundreds of student-nurses and training-school graduates in this vicinity who now have no chance to learn the art. For, so long as our large training-schools graduate nurses, whose only instruction in obstetrics has been one or two lectures on the subject, we need not expect any spontaneous improvement. The graduates of these large schools may know how to manage a typhoid-fever patient, but many of them do not know a nipple-shield from a breast-pump; they, of course, do know how to arrange a room, and instruments and dressings, and the patient for an aseptic surgical operation, but they do not know how to prepare for ordinary obstetric cases. And yet, when they seek for private work, they soon find that surgical cases are not so common as confinements. Their general training, of course, helps them greatly in obstetric work if they bravely undertake it, but they have no opportunities hereabouts for instruction in this branch unless they enter the lying-in hospital courses, which at most could not accommodate one-tenth of those who should receive instruction before receiving their diplomas.

Physicians have to study surgery and obstetrics, even if they from the first intend to practise only as specialists in other branches. And it is accepted as axiomatic that some preliminary general practice is necessary to highest development in any specialty. Even more truly is this the case in the profession of nursing. No training should be considered complete that does not include obstetrics: nor should any obstetric nurse be considered as well trained who has not also been trained in the nursing of surgical and medical cases.

And yet the custom still prevails in Boston of training nurses only in specialties. Obstetric nurses, and nurses for infants, for lunatics, for neurasthenics, are graduated annually from various institutions; but very few nurses can be found who have received all of the different diplomas, and this in spite of the possibilities that neurasthenic women may have to be delivered and may become insane. Consulting specialists may so supplant the general practitioner that his type shall become extinct; but in the profession of nursing the good, all-around nurse is what is wanted now, and will be forever.

As a remedy for the present confusion, it might be thought possible to secure some coöperation among the different training-schools, such as has been secured in other cities; but that hope need not be entertained for Boston, for so jealously guarded are their doors, that not even the graduates and superintendents of other schools are allowed opportunity to study each other's methods of training. In other cities, both in this country and abroad, such opportunities are most hospitably afforded. In Boston, it would be considered most impudent even to suggest to any one training-school the possibility of its being improved by association with any others, and any appeal for a more general distribution of its peculiar advantages is met by the courteous announcement of its weekly lectures and monthly conferences, which by the liberality of the trustees are open to outsiders.

The means of improvement must, therefore, be

sought independently of present organizations. It would be easy, for instance, for the Obstetrical Society to inaugurate, or at least to matronize, a course of post-graduate instruction in obstetric nursing which should include a stiff course of lectures, recitations and examinations, with practice under approved instructors in the dispensary districts and in the homes where only very moderate wages could be afforded. The diploma granted to those who earned it would give a rating like that of the London Obstetrical Society. Were such a course of instruction offered, hundreds would apply. There would be an immediate supply of nurses for the poor, and for those who can pay at most only a few dollars for their care during confinement. The instructors in this post-graduate school, in return for their teaching, would have an abundance of assistance, and would be saved many hours of weary nursing service which they now endure.

In the same way, other societies might inaugurate special post-graduate courses of instruction in other departments of nursing. Thus nurses might be taught how to take care of infants, a department now most sadly neglected.

But better far than separate and independent post-graduate courses would be a central post-graduate school which would have general management. Such a school could do more for the advancement of the nursing profession, and consequently, for the advancement of the practice of medicine, than any agency within the realm of things possible and practicable.

Such a school would need no endowment. From its inception it would be more than self-supporting. Out of it would grow perfect systems for the registration and the distribution of nurses. In place of feeble guilds and graduate clubs would grow a large, strong association of all the members of the nursing profession. And finally, Boston might so regain her old-time preëminence as an educational centre for nurses.

One of the many advantages that would result from such a central post-graduate school would be that of uniformity in the matter of giving diplomas to nurses. The course of instruction would have to be lengthened, which by no means should be considered a disadvantage. Graduates of the present schools might then seek work as they do now, or they might take the different courses and examinations of the post-graduate school in the surety that, having obtained the advanced diploma, their services would be in greater demand.

This in time would naturally lessen the apparent value of the diploma now given by the different schools; but if it led, as well it might lead, to a uniform examination by the central licensing board, the greatest benefit would result.

Thus, in the special department of instruction under our present consideration, there is now no uniformity in the different diploma-giving schools, and we have no means of ascertaining what instruction has been given to the nurses who are engaged for our obstetric cases. For this we have only ourselves to blame, for if we instituted even examinations for nurses in this department, the different schools would at once try to conform their instruction in this branch in order that their graduates might with least difficulty obtain the advanced diploma.

As is true in every professional school where the diploma carries with it any certificate of fitness to practise, the diploma is open to suspicion if it be

granted solely by the instructors of that particular school. Thus, for instance, the possessor of such a diploma may be better versed in the different instructors' whims than in real knowledge.

If, then, we cannot at once arrange for post-graduate instruction for nurses, let us at least arrange for the examination of nurses, and so secure some sort of uniformity in their training.

THE GASTRIC AND RESPIRATORY SYMPTOMS CAUSED BY THE DUST OF CURLED HAIR.¹

BY ARTHUR P. CHADBOURNE, M.D.,

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CONSIDERING the great differences in the composition of the various kinds of "dust" that are known to cause so-called "dust-disease," it is somewhat surprising that it should have been possible to group almost all the resulting symptoms under the single disease called "fibroid phthisis," or "pneumokoniosis."² The list of industries that are recognized as being dangerous to the workmen on this account is already a long one, and a single addition to the number would be of little interest. The patient who is here to-night, however, has no evident signs of a "fibroid" change in the lungs, though his symptoms undoubtedly arose from continued exposure to dust in the factory where he has worked for many years.

Before giving the history of the present case, let us consider what this dust really is, and in what ways it would be likely to act in producing disease. Though there are hardly any two of the "dust-producing trades" in which the composition of the dust is exactly the same, yet in all the dust is alike made up of minute particles, so small as to float about for some time and be easily drawn in with the air breathed by the workmen. The action of these minute particles may be purely *mechanical*, and it is largely, if not entirely, from this mechanical irritation that so-called "fibroid phthisis" is commonly believed to arise. In the second place, the great differences in the composition of the different kinds of dust might well be expected to influence its *local action*, if nothing more. Among the substances that make up these minute particles are some that are known to have a marked action on the human organism as a whole; in others the effects are more local, or confined to one or more groups of organs; some are accumulative, others active poisons; while still others are probably inert, at least in the form in which they occur in the dust, and finally, quite a number are used as medicines. Plant and animal products, as well as inorganic matter, are among them.

Such substances may reach the larynx and respiratory tract, either by way of the nose and naso-pharynx, or directly through the mouth; but a part of the inhaled dust must be carried into the œsophagus, and in this way may enter the stomach. The portion of the foreign matter that can be absorbed, either changed or unchanged in chemical constitution by the secretions and tissues with which it may come in contact; and its characteristic general symptoms will then follow if the amount which thus enters the system is sufficiently great.

¹ Read before the Section of Clinical Medicine, Pathology and Hygiene of the Suffolk District Medical Society, February 21, 1894.

² Dust which contains lead, arsenic, etc., of course an exception.

To return to the history of the present case, in which the action of the dust is certainly not that of a purely mechanical irritant.

J. D. came to the Carney Hospital (A. P. D.) in January, 1894. His family history was excellent. He had never been "sick in bed a day in his life that he could remember"; nor had he had any "lung trouble," except a few days' cough when "he had taken cold," and when working in the dust of the factory. On Sundays and holidays never coughed at all. Habits and personal history good.

For twenty years he has steadily worked in the same factory, with the exception of a few months when he was "train-hand" on a railroad, but this was thirteen years ago. In the factory, "curled hair" is prepared for mattresses, etc. Both horses' and pigs' hair is used, but only the latter is dyed; and it is when this dyed hair is used that he is troubled with his present symptoms. The pigs' hair is "disinfected" as soon as it is received at the factory, and is then thrown into large vats, which contain a mixture of logwood (*hæmatoxylon*) and copperas (iron sulphate, with copper sulphate as an impurity, and more or less sesquichloride of iron³). When thoroughly stained, the hair is removed and dried; it is then piled up ready to be put through a machine called a "separator." The "separator" pulls apart the tangled masses of hair, while a blast of air is at the same time forced through to remove the dirt, broken pieces of hair and other dust. This dust completely fills the air, and rapidly accumulates around and on the machine. The patient "feeds," that is, keeps the "separator" supplied with hair from the heap already mentioned, and has, therefore, been obliged to breathe the dust-filled air near that machine for almost twenty years.

He describes his symptoms somewhat as follows: When actually in the dust he always has more or less cough, and raises a "little thin, frothy spit, which is rather blue-colored"; but as soon as he stops work the cough stops also. For two or three weeks before I saw him he had what he called a cold, and was then raising more or less sputum all day and more at night. When working with the dyed hair the color was blue, but in the morning white and "lumpy." The specimen brought me was muco-purulent, white, and careful examination failed to show tubercle bacilli. The chief complaint, however, was of his "stomach," which had "hurt him in the same way ever since he had been in the factory, but was getting worse lately." When undyed hair was being prepared his "stomach was much better always." There was a sharp, burning pain, beginning just below the sternum, and going straight up to his "Adam's apple" (larynx) and his "mouth tasted bitter and like brass." There was pain in the epigastrium, which increased with pressure. Appetite fair. Bowels always regular, and dejections natural color. No vomiting; nausea occasional. These symptoms begin two or three hours after he has worked with the dyed material, and sometimes last a day or two after he has stopped using the dyed material. No marked loss of flesh.

On examination, the patient was thin, and, though poorly developed and hollow-chested, was not emaciated. Marked cyanosis and dyspnoea were absent. The tongue was thickly covered with a yellowish-brown fur. The chest showed nothing abnormal, ex-

³ Lead, zinc and arsenic were tested for in the dust, but were not present.