at the same time. There is no doubt about the possibility of carrying the disease in the clothes. Most physicians are willing to take the time for good surgical technic, but I believe many are not willing to take the time for good medical technic, of which this is a good example.

Quarantine.—In Portland, all patients receiving board of health antitoxin treatment are quarantined three weeks. Of course all cases of diphtheria should be quarantined, but I do not believe that all who receive antitoxin treatment should be long quarantined; for example, if in a suspected case antitoxin is given as a safeguard, and if by cultures the case proves not to be diphtheria, I think quarantine should cease. A careful board of health may reply that some physicians would fake cultures, that all cases of diphtheria would not be kept in quarantine. On the other side there is the fact that doctors, at times disliking to quarantine unnecessarily, will, to be more certain of diagnosis, let a mild case advance; and so while the use of board of health antitoxin compels quarantine, lives of patients will perhaps unconsciously be risked. I know of a case of a child three years old, living in a boarding house, which one would not like to quarantine unnecessarily. The diagnosis of diphtheria being uncertain a bacteriological examination was awaited. The bacteriological report was positive and twenty-four hours later the child died.

I believe really that such delays are faults of physicians and not faults of board of health rules; and, finally, that it is surely better to quarantine a number of families needlessly than to lose one patient through fear of it.

A SIMPLE METHOD OF RECONSTRUCTING NERVE PLEXUSES.

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A COMMON difficulty in the study of anatomy is the visualizing of relations. This is particularly true of the nervous system. However elaborate diagrams and plates may be, they fail to impress the important spatial relations of various structures. Dissection naturally comes to one's rescue in this respect, but even here the natural difficulties of continuing work in the dissecting room, after the early student years, are practically prohibitive. Any simpler resource, therefore, which will tend to impress upon the mind the relationship of correlated parts is of value, not only in teaching anatomy, but also in learning it. Hence have arisen various methods of more graphic representation than even the best illustrations can supply. Clay modeling, for example, has long been used with great success in the reconstruction of internal organs and, to some degree, in the study of the nervous system. Herring¹ describes in a convincing way the value of clay modeling as applied to the nervous system, and the extraordinary work of Florence

R. Sabin in reconstructing the oblongata is well known to all students of the subject.

Perhaps the most elaborate attempt of this sort in teaching the finer anatomy of the central nervous system is described by Hardesty,² of the University of California. In a paper entitled, "A Class Model of the Spinal Cord," Hardesty describes in great detail a method of tracing the course of fibers in the spinal cord and lower oblongata by graphic methods. His plan is to make several cross sections of the spinal cord by means of wax plate models, accurately outlined from actual specimens. Stout wire is then used to connect the levels and to represent the various fiber tracts which may be easily distinguished by painting in different colors. By these means it is possible to build up in very considerable detail the essential internal structure of portions of the nervous system. In fact, the method has proved so practicable in Hardesty's hands that the students are expected personally to make such models as part of their training in the anatomy of the nervous system. It need hardly be said that the details which such a model brings out are not to be obtained through dissection, nor through the study of sections by the microscope, and yet these are the important points and far overbalance in significance to the clinician the descriptions which may be derived from textbooks and the ideas which are obtained from the ordinary course in descriptive anatomy.

A matter of considerable difficulty to the medical student is a proper understanding of the significance of nerve plexuses in relation, on the one hand, to segmental lesions of the cord, and, on the other, to disturbances in the distribution of peripheral nerves. In other words, the exact relation of nerve roots to peripheral nerves is not forthwith apparent and cannot be made so by dissection. Stimulated by Hardesty's very much more elaborate work, it occurred to us that a simple means of demonstrating by a graphic method the relation of nerve roots to peripheral distribution would be of value in teaching. In carrying out this general idea, the following means suggested themselves which are absolutely simple and at the same time demonstrate in striking fashion the points desired.

A piece of stiff cardboard is the first requisite. On this cardboard, preferably white, are specified the various nerve roots which enter into the composition of the plexus. Each of these nerve roots is represented by a single colored yarn or worsted, and by as many strands as the final distribution of the particular nerve root in the periphery may demand. As the various nerve roots, each represented by its color, break up in the plexus, the strands of worsted are separated and joined with those which come from other nerve roots according to the ascertained anatomical facts, ultimately emerging as the individual peripheral nerve containing fibers of the various nerve roots from which the special nerve has origin. At points where the plexus

¹ Herring: Clay Modeling in the Study of Anatomy. Jour. Am. Med. Asso., 1904, xliii, 454.

² Hardesty: A Class Model of the Spinal Cord. Bull. Johns Hopkins Hosp., 1906, xvii, 43.

divides, and at any others, for the purpose of securing the yarn to the underlying cardboard, we have found the most convenient means the use of very fine wire which may be looped over the strands of worsted and fastened on the under side of the cardboard. The result of this very simple device for making clear the components of peripheral nerves is entirely satisfactory. It is possible at once to determine precisely the nerve roots from which a given peripheral nerve springs and conversely to determine how wide a peripheral distribution any single nerve root has. A reference to the accompanying drawing will illustrate the method better than a more detailed verbal description.

The plan of reconstructing the plexuses, as outlined in what we have said, is so simple and carried out with so little expenditure of time, that it might well be used for an entire class. Furthermore, the materials necessary are so inexpensive and so easily procured that a large class could be provided at extremely small cost. The essential advantage of such a method of studying nerve supply is that the student does the work himself, referring naturally to anatomical textbooks for details of distribution. We have no question that once having worked out the plexuses in this way at first hand and unaided, a student would have a clearer and more practical conception of their structure than through many

Representing the six segments and their nerve roots which go to constitute the sacral plexus by variously formed lines, which in the actual model are much more graphically represented by different colored worsteds, it may easily be seen how the plan of the plexus may be worked out. For example, the inferior gluteal nerve is represented in the fifth lumbar and first and second sacral nerve roots, the great sciatic in all the nerve roots, excepting the fourth sacral, etc. On the other hand, should one wish to determine quickly what the peripheral representation, for example, of the first sacral nerve root is, it may forthwith be seen that the inferior gluteal, external and internal popliteal, and the small sciatic nerves derive elements from it. If carried out further, there is no difficulty in determining the segmental distribution of the sensory nerve supply, a matter which is apparently puzzling to the student.

hours devoted to textbook descriptions and even to dissection. The reconstruction of plexuses, in this manner, has also much practical importance from the standpoint of neurological diagnosis. It is not likely, after such individual work, that a person would forget the difference between a segmental or nerve root lesion and one in which the peripheral nerve was involved. It is not to be questioned, also, that the relatively small amount of work and study requisite to the correct construction of the plexuses would be of very material value in rendering the knowledge so obtained permanent.

ANTITUBERCULOSIS DISPENSARY AT BAHIA, BRAZIL.—The corner-stone of a dispensary for the aid of the tuberculous was recently laid at Bahia, with appropriate ceremonies, the governor of the state presiding. It is the work of the Bahia Antituberculosis League, which was organized last spring by the professors of the medical faculty and others.