should be, interested in so vital a question. None of us know, fortunately perhaps, how, or at what time, the injury may come to us through the ignorance of some of the new-fledged graduates of many of our schools. It should be said again and again, therefore, that the diploma-giving power of many of the medical schools of this country should be in some way regulated according to the thoroughness of their course for a degree.

The movement to induce the International medical congress to hold its meeting of 1887 in this country should meet with the success it deserves. The possible benefits to be derived from this are very great and far-reaching. The presence of so many of the *savants* of the medical world might be of benefit in showing some of us what we do not know. The bringing so near home, too, the results of the scientific labors pursued so much farther abroad than they are with us, might serve to open the eyes of more of our rich men, and lead to the establishment of the scientific laboratories that we need so much.

A committee was appointed to attempt to induce congress to provide for the systematic investigation of infectious diseases in this country, — a forlorn hope truly, so long as our legislators are as they are; but at the same time the slight possibility of success should not hinder the attempt from being made. Those who are interested in scientific investigation of this nature, however, do not look for the establishment of any governmental institution until the average member of that government has lost his desire for a sure return in dollars and cents to an investment.

The lack of scientific work in its purest form was well shown in the discussion upon 'tuberculosis' which took place on the last day of the session. This disease is the centre of scientific medical interest just now, and has been ever since the announcement by Koch of his discovery that its cause could be found in a micro-organism. The evidence brought forward since that time has been strongly in support of the truth of his assertions. The gentleman who opened the discussion did not agree with Koch's conclusions on the ground of personal observations; the basis of his conclusions being reserved, however, for future publication. By far the larger number of those participating in the discussion took sides with Koch; and yet, eminent as most of them were, there was hardly an observation made that was based upon the result of original personal investigation. For this reason the discussion was satisfactory only as bringing out personal opinion as based upon literary, and not upon laboratory work. What is needed in this country, above and beyond any thing else in the medical way, is a corps of scientific investigators devoted to their work, and thoroughly well equipped by temperament and training. Before this comes, however, must be the establishment of thoroughly endowed and completely independent centres where their work can be performed.

This gathering in Washington should teach the impropriety of asking for papers that are not likely to be presented to the meeting, the necessity for a little more control over the methods of discussion, and the need for a better representation of the men especially interested in scientific research, if there be any who have not yet made their appearance.

The needs especially emphasized are the want of a higher standard of medical education throughout the country, and particularly the lack of facilities for scientific research in the newer branches of medicine.

From a professional point of view, the meeting was a successful one in most respects; the papers that were presented showed care in preparation, and, as a rule, a thorough practical knowledge of the subjects treated. As in all such cases, however, the especial benefit to be derived was found in the opportunities presented for personal contact and conversation between men separated by long distances from one another.

HOW EGG-COCOONS ARE MADE BY A LYCOSA.

AT the meeting of the Academy of natural sciences of Philadelphia, May 13, Rev. Dr. H. C. McCook stated, that, while walking in the suburbs of Philadelphia lately, he had found under a stone a female Lycosa, probably L. riparia Hentz, which he placed in a jar partly filled with dry earth. For two days the spider remained on the surface of the soil, nearly inactive. The earth was then moistened, whereupon she immediately began to dig, continuing until she had made a cavity about one inch in depth. The top was then carefully covered over with a tolerably closely woven sheet of white spinning-work, so that the spider was entirely shut in. This cavity was fortunately made against the glass side of the jar, and the movements of the inmate were thus exposed to view. Shortly after the cave was covered, the spider was seen working upon a circular cushion of beautiful white silk about three-fourths of an inch in diameter, which was spun upward in a nearly perpendicular position against the earthen wall of the cave. The cushion looked so much like the cocoon of the common tube-weaver, Agalena naevia, and the whole operations of the lycosid were so like those of that species when cocooning, that it was momentarily supposed that a mistake in determination had been made. After the lapse of half an hour, it was found that the spider had oviposited against the central part of the cushion, and was then engaged in enclosing the hemispherical egg-mass with a silken envelope. The mode of spinning was as follows: the feet clasped the circumference of the cushion, and the body of the animal was slowly revolved; the abdomen, now greatly reduced in size by the extrusion of the eggs, was lifted up, thus drawing short loops of silk from the expanded spinnerets, which, when the abdomen was dropped again, contracted, and left a flossy curl of silk at the point of attachment. The abdomen was also swayed backward and forward, the filaments from the spinnerets following the motion as the spider turned, and thus an even thickness of silk was laid upon the eggs. The

same behavior marked the spinning of the cushion, in the middle of which the eggs had been deposited. The ideas of the observer as to the cocooning habits of Lycosa were very much confused by an observation so opposed to the universal experience. Upon resuming the study after the lapse of an hour and a half, he was once more assured of being right by the sight of a round silken ball dangling from the apex of the spider's abdomen, held fast by a short thread to the spinnerets. The cushion, however, had disappeared. The mystery, as it had seemed, was solved: the lycosid, after having placed her eggs in the centre of the silken cushion, and covered them over, had gathered up the edges, and so united and rolled them as to make the normal globular cocoon of her genus, which she at once tucked under her abdomen in the usual way. This was a most interesting observation, which Dr. McCook believed had not before been made. The manner of fabrication of the cocoon of Lycosa had been heretofore unknown to him, and, by reason of her subterranean habit, the opportunity to observe it was of rare occurrence. He had often wondered how the round egg-ball was put together, and the mechanical ingenuity and simplicity of the method were now apparent. The period consumed in the whole act of cocooning was less than four hours: the act of ovipositing took less than half an hour. Shortly after the egg-sac was finished, the mother cut her way out of the silken cover. She had evidently thus secluded herself for the purpose of spinning her cocoon.

Dr. McCook also alluded to another interesting fact in the life-history of the Lycosa, which had been brought to his attention by Mr. Alan Gentry. A slab of ice having been cut from the frozen surface of a pond about eight or ten feet from the bank, several spiders were observed running about in the water. They were passing underneath the surface, between certain water-plants. It is remarkable to find these creatures thus living in full health and activity, in midwinter, within the waters of a frozen pond, and so far from the bank, in which the burrows of their congeners are commonly found. It has been believed heretofore, and doubtless it is generally true, that the lycosids winter in deep burrows in the ground, sealed up tightly to maintain a higher temperature.

CALDERWOOD'S MIND AND BRAIN.

The relations of mind and brain. By HENRY CALDERWOOD, LL.D., professor of moral philosophy, University of Edinburgh. Second edition. London, *Macmillan & Co.*, 1884. 20 + 527 p. 8°.

IT is a striking comment upon the complete change of stand-point assumed by psychologists, to find an eminent Scotch metaphysician giving up one-half of a work upon the mind to the consideration of the anatomy and physiology of the brain. That he is in accord with the prevailing tone of thought, both among general readers and among special students, is proved by the fact that a second edition of this work has been demanded.

Dr. Calderwood presents the results of recent investigation in two sciences, — physiology and psychology, both animal and human; and his work is in the main successful, because the author possesses the power of impartial judgment, which enables him to admit all the evidence before pronouncing a decision, and also the power of making a clear statement of both scientific facts and philosophical problems. Those who desire to ascertain the kind of work which is being done in the comparatively new department of physiological psychology will find the book of great service. The subject "has to do with the foundation questions for all mental philosophy; for current theories concerning the origin and development of life on the earth, and speculation affecting the order and government of the universe as a whole, have more or less bearing upon it" (p. 9).

In the earlier chapters, the author succeeds in giving a clear and interesting account of a dry and complex subject, — the comparative anatomy of the nervous system. He then proceeds to the physiology of its various parts, devoting particular attention to the question of the localization of functions in the brain. The existence of definite areas upon the surface of the brain, whose irritation produces motion of the limbs, or sensations, according to the area irritated, and whose destruction produces a loss of the power of motion or sensation in the corresponding organs, is no longer a matter of question. By confining his attention to the researches of Ferrier, and by omitting the equally important and more recent conclusions of Munk of Berlin, Dr. Calderwood has failed to give a complete review of the physiological facts at present known. Had he ascertained the position reached by pathologists from the study of cases of limited centres of disease in the brain of man, he would have admitted more freely the existence of localizable areas in the human cerebrum. In his chapter on brain-disorders, he omits to mention a large class of cases which have a bearing on this subject; viz., cases in which a small destruction of brain-substance has been accompanied by a loss of one function, the function affected depending upon the situation of the disease. In this connection, Dr. Calderwood repeats a statement of Sir Charles Bell, that "whole masses of brain in man may be destroyed without any immediate influence upon mind" (p. 51). As a matter of fact, careful examination of such cases will rarely fail to demonstrate the pres-