the population. One-fourth of the whole number occurred in Hampden County. Eastern Massachusetts suffered severely from malarial fevers in 1884, 1885, and 1886, but few of the cases, however, proved fatal.

MICHIGAN SANITARY CONVENTION. — A sanitary convention is to be held at Albion, Mich., under the auspices of the State Board of Health, Dec. 6 and 7. The objects of the convention are the presentation of facts, the comparison of views, and the discussion of methods relating to the prevention of sickness and deaths, and the improvement of the conditions of living. It is intended to be a convention of the people generally. Among the subjects which it is expected will be presented and discussed are the following: 1. The present and future water-supply of Albion; 2. Disposal of waste in Albion by sewerage and otherwise; 3. School hygiene; 4. Money-value of sanitary work; 5. Restriction and prevention of communicable diseases, from four standpoints, — (*a*) of the State Board of Health, (*b*) of the health-officer, (*c*) of the clergyman, (*d*) of the lawyer.

CHLOROFORMING WHILE ASLEEP. — We had occasion in a recent number of *Science* to refer to the possibility of chloroforming persons while asleep without awaking them. In confirmation of the statement which was then made, that under favorable circumstances this could be accomplished, we quote a case which occurred in the New Orleans Charity Hospital and is reported in the *New Orleans Medical and Surgical Journal.* A child six years of age was suffering from pleurisy, and it became necessary to draw off the fluid effusion which had accumulated in his chest. He was very much afraid of the operation, and it was determined to attempt it while he was asleep. On the following day, while sound asleep, chloroform was administered without awaking the child, and twenty-four ounces of fluid were withdrawn. The child continued to sleep throughout the night, and when it awoke the following morning knew nothing of the operation.

FLIES AS CARRIERS OF CONTAGION. — A report was made to the French Academy of Sciences by Spillman and Hanshalter, giving the results of their investigations into the possibility of flies acting as carriers of contagion. These observers examined the excrement and intestines of flies that had fed on the contents of spit-cups used by consumptive patients, and found the bacilli of consumption in abundance. These bacilli were also found in the dried excrements of flies scraped from the windows and walls of rooms occupied by consumptives. These facts are in perfect consonance with the recommendations of the American Public Health Association, that the sputa of consumptive patients should be received in vessels in which disinfectants have been placed.

THE PLYMOUTH TYPHOID EPIDEMIC. — Our readers will remember the epidemic of typhoid-fever which created such consternation in Plymouth, Penn., in 1885. The population at that time was 8,000. Of these, 1,153 contracted the fever, and 114 died, a mortality of nearly 10.33 per cent. It is now stated that typhoid again prevails to an unusual extent in Plymouth, and that fears are entertained of another epidemic. There are said to be thirty cases of the fever there at the present time. In connection with the subject of typhoid-fever, there have been reported in France three cases in which the disease seems to have been transmitted through the air. A patient suffering with typhoid-fever stopped at a hotel in Eaux-Bonnes. In four weeks she recovered, but the three daughters of the hotel-keeper were attacked. Eaux-Bonnes is said to have a bountiful supply of excellent spring water, and there was no other case of typhoid in the town. The discharges from the stranger were thrown, in an undisinfected state, into the water-closet, the door of which communicated with the room in which the landlord's daughters slept, at a distance of only three feet. It seems reasonable in this instance to eliminate the drinking-water from the factors in causing these three cases, and to charge the infection to the neglect of disinfection of the excreta.

SEASICKNESS. — The *Semaine Médicale* contains the views of Dr. W. Skinner on seasickness. He looks upon it as the expression of certain purely functional or dynamic disturbances of the organism, some of the symptoms indicating a general fall of the arterial blood-pressure. The starting-point is probably a reflex inhibition coming from the sensorium or from the nerves of the abdominal organs, which is brought about by a contusion or stretching of these organs due to the motions of the vessel. His treatment consists in the use of vaso-motor stimulants, strychnia, atropia, and caffeine, introducing them hypodermically. Dr. Skinner reports thirty-nine cases in which his treatment was efficacious, one of them being an infant of two years and a half.

HYDROPHOBIA. — In the latter part of September three children died in England from hydrophobia, having been bitten by rabid dogs. Their mother was bitten at the same time, and has gone to Paris to be treated by Pasteur. Another child, not of the same family, was bitten by a rabid dog at Lancaster. Seven days after, he went to Paris, where he remained a month under treatment. The day after his return the first symptoms of hydrophobia appeared, and in two days proved fatal.

YELLOW-FEVER AT TAMPA. — Dr. Porter, president of the Key West Board of Health, has gone to Tampa, Fla. He reports that the disease which lately appeared there is undoubtedly yellow-fever. To Oct. 14, there had been eighty cases, of which twelve had proved fatal.

MENTAL SCIENCE.

Bilateral Asymmetry of Motion.

DR. J. LOEB of the University of Würzburg has made some very interesting observations on the motion of the two arms. A thread is stretched between two uprights at such a height, that, with the fore-arm bent at a right angle at the elbow, it can be conveniently held between the thumb and forefinger of either hand. In the first series of observations, the two hands started together at the middle of the string, and moved outwards to either side until signalled to stop by the experimenter. The object was to move the two hands with equal speed; but it was found that every subject either constantly moved the right hand farther than the left, or the left constantly farther than the right. Right-handed persons who were not handicraftsmen, usually allowed the right hand to make the longer excursion, and contrariwise for the left-handed. The difference between the movements of the two hands varied from one-tenth to one-half of the space moved over. If, instead of the operator's signal, a clamp was placed upon the thread on one side to indicate when the subject should stop, the general result was the same, though the hand on the side of the clamp usually moved more cautiously.

Thinking it probable that the difference was due to the difference in the nature of the voluntary impulse imparted to the two hands, Dr. Loeb himself moved one of the subject's hands to one side, while the latter was to simultaneously move the other out to an equal distance. But the result was as before: the asymmetry constant for each person remained; and that, too, no matter whether the right hand was passively moved and the left hand moved voluntarily, or the reverse. The size of the error, however, is reduced in the sense, that, compared with a voluntary motion under the same conditions, a passive motion seems larger. This Dr. Loeb thinks may be due to the fact that there was a conscious fear of moving the active hand too far, and that the attempt to correct this resulted in an error in the opposite direction. All the above observations were made upon persons ignorant of the resulting asymmetry. Those who were informed of the result, or discovered it for themselves, thereafter much diminished their error.

The next variation consisted in having the two hands move, not in opposite, but in the same direction; that is, either with the left hand starting in the middle and the right hand to the right side to move towards the left, or with the right hand in the middle and the left hand to the left side to move towards the right. As before, the two movements were simultaneous, were to be made equal in extent, and the motion of one hand was arrested by a clamp set upon the string, Here a new law enters; and the result is, that, independently of the hand and of the direction of the motion, the motion from the exterior towards the middle is always distinctly larger than from the middle towards the exterior.

To eliminate the asymmetry between the two hands, the experiment was made with one hand only, first moving out a given dis-

tance, and then attempting to repeat the motion. The general result was, that the reproduced motion was larger than the original, when the motion was made on the hand's own side, — for the right hand on the right side, and for the left hand on the left.

In conclusion, Dr. Loeb asks the question, "On what basis does the mind conclude that the motions of the two hands are equal?" He answers that it is due to the time element. There is an unconscious attempt to translate space into time, because we can judge the latter more accurately; and, in several series of experiments in which the time was recorded, it was found, that, even when the two hands moved quite different distances, the times of the two motions were approximately the same. The mind, then, judges two motions to be the same when they are innervated by equally intense impulses, and consume equal times; and the asymmetry is referred to the fact (due to increased practice, or what not) that an equal impulse will impart a larger motion to the one (the preferred) hand. That other factors enter into the problem is not to be doubted: for example, if one thread is rough and the other smooth, the same distance on each will seem longer on the rough thread, by more frequently stimulating the skin. Dr. Loeb promises a continuation of the observations.

FALSE TESTIMONY OF CHILDREN. — The trial at Tisza-Eszlar is probably sufficiently well in mind to serve as a type of the false evidence given by children. Dr. A. Motet has collected a number of similar cases, and shows very distinctly that the children in question are quite generally the subjects of morbid tendencies. Frequently they are the offspring of a degenerate stock, and are characterized by weakness of will, and a love for excitement. The analogy between these suggestions accepted and elaborated by these children in a waking condition, and precisely the same phenomena in hypnotic states, is evident. Dr. Motet suggests several hints by which such testimony can be prevented from imposing upon the courts, and urges that a careful physician be summoned when any such suspicious testimony by a child is deposed. It illustrates anew the close connection between responsibility and nervous affections as well as between the doctor's study and the court's dictum.

SMELL AND TOUCH VERSUS SIGHT. — Dr. Fauvelle calls attention to the inverse relation between the development of the visual and the olfactory apparatus, and holds that smell, when supported by touch, can in some forms of life outweigh sight. The snout, when it occurs, is always at the most anterior portion of the body in progression, and through this heralding position becomes endowed with a most delicate sensibility, often of mobility too, and at the same time brings into prominence the olfactory mechanism. The changes in the form of this naso-labial organ of touch follow all the changes in the prominence of the organ of smell, and prevent a special development of the organ of vision. In man and the primates this loses its importance and yields to sight, which superiority is assigned to the parallelism of the visual axes, and establishing of the biped position, where the organ of smell is no longer at a prominently anterior position of the body.

BOOK-REVIEWS.

Industrial Education, a Guide to Manual Training. By SAMUEL G. LOVE. New York and Chicago, E. L. Kellogg & Co. 8°.

IT is inevitable that there should spring up in the earlier stages of a movement for educational reform a large literature. Some of this will naturally be good; but much of it, owing to superficial knowledge or misconception, will be bad. Public opinion on the reform in question is in large measure formed by these early books, and for that reason, if for none other, the critic should scan them with great care.

Mr. Love's book is one of the first in this country that undertakes to explain in detail what manual training really means; and, as a great many people are just now asking the very question which it professes to answer, it will naturally have a large number of readers. But it is extremely important that only correct information should be given concerning manual training, and that one or two sources of general confusion as to its purpose and aim should be removed. We have read Mr. Love's book carefully with these points in view. The book is divided into five parts and an introduction. The first part discusses the claims of manual training, and the second describes what has been done in Jamestown, N.Y., — in which town Mr. Love is superintendent of schools, — in development of this training, and gives the course of study pursued therein. The third, fourth, and fifth parts discuss the organization and carrying-out of manual training in the various grades of the primary, grammar, and high schools, respectively. Mr. Love has worked conscientiously, and has beyond question accomplished a great deal of good. His fellow-citizens seem (pp. 27–29) to approve his work, and to be in harmony with his ideas. But, we regret to say, taking Mr. Love's own language as the expression of his ideas, he himself is still very much in the dark as to what the movement in favor of manual training really signifies.

Those persons who have an insight into the real aim of manual training know how difficult it is to make others understand that the manual training urged is mental training: for no one who understands our public-school education would for a moment urge that any thing which is not purely and simply educational should find a place in it. Manual training would not train the hand *per se*, but the hand as the servant of the mind, and as one of the mind's agents of expression. Manual training, which is technical and not mental, must be provided for, but apart from and not in the public schools. This has been insisted upon so often lately, that we had hoped the point was clear to all, and it is extremely discouraging to find Superintendent Love marking off his manual training as something foreign to mental training, as he explicitly does in several passages of his introduction, and impliedly does throughout the book. In fact, the author's idea is that manual training should be added on to the school course, as a matter of privilege. The correct idea is that manual training should be incorporated in the common-school course as a matter of right. The two conceptions differ widely in theory, and still more in practice. For example: the clear-sighted advocate of manual training would never urge, as does the author (p. 7), that it should be introduced because "very many children dislike books." This argument, if pursued logically, would create havoc in any system of education.

Every once in a while the author seems to approximate the proper point of view, as when (p. 33 *et passim*) he classifies writing, drawing, gymnastics, and card-board work together under the head of manual training. But when we turn to his carpentry course, and see how wholly blind he is to the proper relation of drawing to constructive work, we despair again.

Minor criticisms might be passed on various portions of the book, but this fatal misconception of manual training in general renders them unnecessary.

Superintendent Love has proved to the satisfaction of himself and his townsmen that the old-fashioned curriculum does not satisfy the educational demands of to-day, and in adopting manual training he did a wise thing; but his book proves that he adopted it for the wrong reasons and in the wrong way.

Philosophy of Theism. By BORDEN P. BOWNE. New York, Harper. 8°.

PROFESSOR BOWNE'S reputation as a thinker rests on a secure foundation, and that alone would entitle this his latest volume to careful consideration. But the 'Philosophy of Theism' will command attention and respect on its own account, for it is in many ways a remarkable book.

In the first place, it is a new evidence of the interest now being taken in the philosophy of religion, and may well take a place beside the volumes of Flint, Diman, Fisher, and others as a masterly exposition of the theistic argument. It is superior in profundity to the recent philosophico-religious books of Royce and Abbott, although we miss in it some of the flashes of brilliancy which make the latter books such interesting reading and constitute so much of their charm.

But Professor Bowne's aim in the work before us is not, as it seems to us, wholly religious. He aims to show that both theism and modern science stand upon a common substructure; namely, the philosophy of belief or faith. Indeed, the author goes even