alleged disease, or, if actually sick, are fully cured. The best answer that mental healers can make to this charge is, that, whether right or wrong in their judgments of what ails their patients, they act precisely as any sensible physician would under like circumstances, and try to relieve the disease. In a chapter on the creeds of mental healers, we find that these differ to a considerable degree among the different schools or sects: for these points of difference we shall have to refer our readers to the book itself. Mr. Barrows states that it would not be putting the case too strongly to say that the theory of the mental healers, carried to the highest point, traces every form of disease, as well as sin, to mental causes, which may be removed and the effects destroyed. Even death itself they hold to be an illusion, that may be dispelled by a full reception of the truth and consequent right thinking. Thought creates a world for each one of us; thought makes the body; and all physical phenomena, whether of disease or health, are due to thought. In commenting on this view of the subject, the author says, that, if utterances like these seem extravagant, it should not be forgotten that a new truth — and every truth we grasp is new to *us*, though old to all the world beside — is apt to intoxicate its possessor, and become to his infatuated sense the universal solvent of the enigmas of life. Time and experience may safely be left to adjust the value of these claims; but meanwhile it is not the mark of wisdom to fear or ridicule them. We must confess, that, after a very careful reading of Mr. Barrows's book, we are as much in ignorance of just what is the basis of the mental healer's claim as we were before. They seem, indeed, to be divided into more sects or schools than those usually called physicians. Some of their claims, as quoted by Mr. Barrows, are simply absurd. Take this one, for example. It is an extract from one of the text-books of mental healing prepared for the guidance of students who intend to practise that method. If the case to be treated is a consumptive, begin your argument by taking up the leading points that this disease includes, according to belief, showing it is not inherited, that inflammation, tubercles, hemorrhage, and decomposition are but thoughts, beliefs, mental images before mortal mind, not the immortal Mind: hence they are not the truth of man, and should be treated as error, put out of mind, and then they will disappear from the body. That Mr. Barrows is a firm believer in mental healing is apparent from his writings; and that he himself believes that some of its teachers and practitioners make ridiculous claims for it, also seems to be clear. We are inclined to agree with some of the writers to whom he refers, — with Dr. Buckley, for instance, who acknowledges that most extraordinary recoveries have been produced, some of them instantaneously, from disease in some cases generally considered to be incurable by ordinary treatment, in others known to be curable in the ordinary process of medicine and in surgery only by slow degrees, — but can hardly be convinced that the case quoted from 'Nature and the Supernatural,' by Rev. Horace Bushnell, ever occurred, certainly not under just the circumstances as given, where a child ill with scarlet-fever was, immediately after a prayer made by his father, completely cured, so as to pronounce himself quite well and ask for his dinner. Mr. Barrows refers to the late Dr. Austin Flint with great respect for his opinions; and if mental healing, as he states, simply emphasizes the highest doctrines of the medical schools as announced by Dr. Flint, then we willingly acknowledge that there is much in it to demand consideration and recognition. Dr. Flint, in one of his addresses, said, "Let it be popularly known that most medicinal agents are curative, not directly but indirectly, by the removal of obstacles in the way of recovery; that Nature is always the efficient curative agent, and therefore that the physician is Nature's servant, not her master." We confess to a feeling of disappointment when we finished reading this book of Mr. Barrows. His preface seemed so fair and unprejudiced, that we expected to get a plain statement of the facts, particularly as he had stated that he had enjoyed exceptional facilities for study and investigation. If mental healing "is to get and retain a hold upon the popular attention," and if "the subject needs only to be presented to educated, thoughtful persons in the right way, to appeal to their intelligence and convince their reason," we fear it must be done in a much simpler, more matter-of-fact, and less metaphysical manner than has been done by the author of 'Facts and Fictions of Mental Healing.'

NOTES AND NEWS.

THE officers for the next meeting of the American Association were nominated as follows: president, J. W. Powell of Washington; vice-presidents, Ormond Stone of the University of Virginia (Mathematics and Astronomy), A. A. Michelson of Cleveland (Physics), C. E. Munroe of Newport (Chemistry), Calvin M. Woodward of St. Louis (Mechanical Science), George H. Cook of New Brunswick (Geology and Geography), C. V. Riley of Washington (Biology), C. C. Abbott of Trenton (Anthropology), C. W. Smiley of Washington (Economic Science and Statistics); permanent secretary, F. W. Putnam of Cambridge (office Salem, Mass.); general secretary, J. C. Arthur of La Fayette; secretary of the council, C. Leo Mees of Athens; secretaries of the sections, C. L. Doolittle of Bethlehem (Mathematics and Astronomy), A. L. Kimball of Baltimore (Physics), William L. Dudley of Nashville (Chemistry), Arthur Beardsley of Swarthmore (Mechanical Science), George H. Williams of Baltimore (Geology and Geography), N. L. Britton of New York (Biology), Frank Baker of Washington (Anthropology), Charles S. Hill of Washington (Economic Science and Statistics).

— The arrangements for the tenth annual meeting of the American Society of Microscopists are now definitely made. The society convenes in Pittburgh, Penn., Aug. 30, 1887, and will probably continue its sessions four or five days. There will be a field-excursion to Chartiers, and the society will be invited to visit the extensive steel-works of Carnegie, Phipps, & Co., at Braddock. The party will go by steamer up the historic Monongahela: a field-excursion has been planned in connection with this pleasure-trip. There will be collected a temporary library of rare books and manuals. A considerable number of volumes have been promised. These will be under the constant care of a librarian.

LETTERS TO THE EDITOR.

*** The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

An Insect-Fight.

AN observation quoted by Professor Morse in his address before the American Association last night is so exactly confirmed by a recent observation of my own, that it seems worth while to put it on record.

While sitting in a hammock slung between two large maple-trees on the lawn, I heard a loud buzzing and fall of something behind me, and, looking around, I saw on the grass a locust (cicada) in the grasp of a large insect, evidently of the wasp family, but which I am not sufficiently well posted in entomology to name. It had brown wings, and large abdomen colored black or dark brown with white spots. The whole length of the insect was about thirty-five or forty millimetres. When first seen, the struggling locust was on its back; the wasp extended above it head to head, and industriously plying its sting between the abdominal wings of the locust. The locust quickly became quiet, and then the wasp, maintaining its former position, which it did not at any time abandon, grasped the head of the locust by the middle pair of legs, and, using the other four legs for locomotion, started to drag it through the short grass toward one of the trees. There was no hesitation or uncertainty, but the wasp started at once in a straight line for the foot of the tree. On reaching the tree, the wasp began without pause to carry its burden up the trunk, using its four legs for walking, as before, and assisting itself to sustain the weight of the locust by putting its wings in operation. In this way, with a few brief pauses as if to rest and get better hold, in one of which it hung for a moment apparently by one leg, the locust was carried up among the branches of the maple, some twenty feet or so, where it became difficult for me to follow its motions. After reaching such a height, the wasp flew off in a straight line through the branches, and went out of sight. I think it carried the locust with it, but the height was so great that I could not be positive. At any rate, the locust did not fall to the ground, although, as the

wasp's flight started from a crotch in a limb, it is possible that the locust was left in the crotch. The whole incident showed a perfect understanding, on the part of the wasp, of what he proposed to do, and the carrying-out of a preconceived plan of procedure without any stopping to think what he would do next. The only pauses were in going up the trunk of the tree.

C. G. ROCKWOOD, JR.

New York, Aug. 11.

A Good Word.

I SEE by your last issue that the Teachers' National Association indorsed the Blair bill. I am sorry to learn of this, as I think that bill is an imposition upon the intelligence of the people of this country.

In the first place, any State that cannot support schools in which to educate its children must be poor indeed; and, in the second place, any State that would accept national aid has not the spirit necessary to a sound government. We can plainly see where the most of that aid would go, and we do not feel like sending it into those States. I am aware that many will deem me unjust; but, be that as it may, I would never consent to the Blair bill, and I am sorry that my fellow-teachers ever gave their indorsement to such a bill, as by so doing it may have some weight in the future; but then teachers are only mortals, and many of them seem to have very poor judgment.

I am glad to see the position that *Science* takes in this matter, and you may rest assured that I shall be a life subscriber to that paper. I consider it the best paper published in this country for any advanced teacher or scientific man. I wish you the best of success.

JAMES LAWREY.

Fremont City, Io., Aug. 8.

The Formation and Dissipation of Sea-Water Ice.

SEA-WATER possesses several characteristics that make the operation of freezing different from that in the case of fresh water.

The density of sea-water increasing till the freezing-point is reached, it follows that its conversion into ice will take place beneath, instead of at the surface as in the case of fresh water. The freezing-point in most cases, then, should be situated near the bottom of the column of water, if not actually at it.

In equal thicknesses of fresh and sea water ice, two inches of the first will support a greater weight, without fracture, than an equal thickness of the latter; although it is quite possible, that, where greater thicknesses are concerned, the advantage may be in the opposite direction.

Sea-water ice is much less 'brittle' than that of fresh water; rising and falling under the influence of a heavy sea, and adapting itself to its undulations, in cases where fresh-water ice would be fractured: this is particularly noticeable in the earlier stages of its formation.

An inch of newly formed sea-water ice will not support a man's weight, and, in giving way beneath him, does so abruptly, without any warning preliminary fissures, leaving a cleanly cut hole of the same extent as the surface over which direct pressure was administered, and thus differs from fresh-water ice, which, on being fractured in this way, carries down a large portion of the surface beyond the area directly under pressure. We may therefore conclude that the cohesion amongst the particles in fresh-water ice is greater than in the case of sea-water, and possibly that the arrangement of the ice-crystals is different in each. Those in the case of fresh water, forming horizontally at the surface, overlap and bind each other together, whilst those from sea-water would seem to arrange themselves vertically, as a comparison of the fractures in each case will show.

The formation of a film of ice over a sheet of sea-water takes place indifferently, as to position, during calm weather; but, with a light breeze blowing, the permanent formation commences at the windward shore; narrow and rapidly lengthening 'streamers' form from the points of this shore; continuing, and growing very slowly narrower as it does so, it may reach a length of from four hundred to five hundred yards; then parallel streamers combine, till at last the entire surface is covered. A great peculiarity of the proceeding is the extreme narrowness of these streamers in comparison to their great length, and the consequently great cohesion that is capable of overcoming the strain that must be caused by even a light wind blowing over so lengthy a surface, whilst it is rising and falling to the pronounced ripple on the water's surface.

Recently formed sea-water ice is not of uniform texture throughout its depth. A section of four inches would be represented by a thin layer of partially decomposed ice, looking very much like thoroughly saturated snow; then about two inches of 'sodden' ice, occupying a condition intermediate between that of the surface film and fully formed ice, both in consistency and appearance; and, finally, the fully formed ice, having every appearance of fresh-water ice. These differences in the several strata of the ice do not continue, once the temperature of the air becomes very much lower than that of the water's freezing-point.

When the ice is first formed in tidal waters, that portion of it which is left aground above low-water mark freezes to the bottom (the temperature of the air being supposed to be below the water's freezing-point); so that, on the water rising again, it is left there, submerged. Over this, at the surface of the water, another ice-film is formed, which, on reaching the level of the submerged ice, is frozen to and remains with it in this position. This operation is repeated, till the result is, that a perpendicular wall of ice forms, whose outer limit is the low-water mark, terminated by a horizontal surface shorewards at the limit of high-water mark. The outcome of this peculiarity is, that the shore outline in winter undergoes a complete transformation, of more or less extent in accordance with the difference existing between high and low water mark. In the case of a mud or sand bottom, the ice, though freezing to it, possesses sufficient buoyancy to raise a film of mud or sand with it each time, till it is of sufficient thickness to counteract this tendency.

The explanation of this phenomenon seems to me to be as follows: in the first place, it is essential that the temperature of the air should be below the freezing-point of the water; and, in the next place, it is evident that the temperature of the earth forming the bottom must be above the freezing-point, else ice would form there; still, it need not be much above it, as the water, being very nearly at the temperature of its freezing-point, would reduce the surface of the bottom to that point, less the increase in temperature consequent on the convection of the earth's heat to that surface. The freezing-point of sea-water being 26°.7, the melting-point of sea-water ice 28°.8 (*Science*, ix. No. 228, x. No. 232), then, if the temperature of the bottom lies between these values, we can understand, that, when the formed ice is placed in contact with it by the falling tide, the temperature of the air reduces that of the water which is running off the ice as the tide leaves it, so that it freezes and cements the ice to the bottom. To free it again requires that the temperature of either the air or the water should rise above 28°.8, which, with the water at 26°.7 and the atmosphere below this point, is not possible: therefore our ice remains fast to the bottom.

Fresh water freezing, and its ice melting, at the same temperature, it cannot possibly freeze to the bottom; for, granting that the temperature of the water may be 32°, that of the bottom must be above, both on account of the water in contact with it being at a higher temperature than this, and because, even if we assume the temperature at 32° throughout, that of the bottom must be above this, owing to convection, as before stated. Anchor-ice does form in fresh water, but not on the bottom proper, as it attaches itself to bowlders or pebbles which are not themselves in perfectly continuous connection with the bottom proper, and are therefore largely surrounded by the water, and correspondingly affected by its temperature, whilst insensibly affected by convection; so that, if we can assume conditions under which the water's temperature would be below the freezing-point, we have those cases in which anchor-ice will form.

On account of the position of the freezing-point in a column of sea-water, it is possible, under certain conditions, for two films of ice to form, one below the other. This was actually observed to have taken place under the following conditions: the temperature