EFFECT OF PRESSURE ON THE FUSION POINT.

Dr. Carnelly recently read a paper before the Chemical Society of London, in which he thus explains the device which he has adopted in order to secure and maintain a vacuum in a case of ice. For the success of the experiment the tension must be below 5 millimetres. The apparatus consists of a wide glass tube ¾ inch in diameter, and about 5 to 6 feet high. This is placed in a vertical position, and is connected at its upper end with a strong glass flask placed horizontally, and surrounded with a freezing mixture. The apparatus having been inverted and filled with mercury, the lower end of the tube is closed with the thumb, and placed under the surface of a layer of mercury about 10 inches deep. On withdrawing the thumb the mercury sinks in the tube to the barometric height, and a large Torricellian vacuum is obtained, which is surrounded, as far as the flask is concerned, with a freezing-mixture. A small quantity of boiled water is now introduced, which rises to the top of the mercurial column, and surrounds the bulb of a thermometer suspended inside of the tube. The water is then frozen, and the depth of the layer of mercury in which the tube stands reduced to about 3 ins.; in consequence the mercury in the tube sinks, and leaves a detached column of ice with the thermometer bulb in its centre. This column acts as a cork, shutting off the large vacuous space above from the small vacuum below. By carefully heating the tube the ice is melted round the circumference of the plug, and a fine annular opening is made between the ice and the inside of the glass tube. This restores the communication between the upper and lower portion of the vacuum. As soon as this is effected, any aqueous vapor which is formed is at once condensed by the freezing-mixture, and the vacuum is kept intact. Under these circumstances the author has made the ice so hot that the thermometer in the centre of the cylinder stood at 180° C. before the ice melted. In the experiment shown to the Society the thermometer only rose to 30° C. when the cylinder (which was too large and therefore too heavy) dropped off the thermometer. To prove that the ice was really hot Dr. Carnelly has contrived and carried out some experiments, in which the cylinder of hot ice was dropped into a small calorimeter filled with water; the temperature rose when the ice was introduced, whereas if ordinary ice it would of course have been lowered. He then showed two experiments with camphor and mercuric chloride, which were perfectly successful. The camphor was contained in a glass tube closed at one end and connected at the other with a Sprengel pump. On heating the tube the camphor melted, but on starting the Sprengel pump the camphor, as the pressure decreased, solidified, though the heating was continuous. The mercuric chloride was similarly raised many degrees above its ordinary melting-point, when kept under diminished pressure, without liquefying; but on allowing the atmospheric pressure to enter, by cutting the tube, the solid mass immediately melted and began to boil.

THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

We are informed by Professor Cleveland Abbe that the following are the newly elected officers of the Philosophical Society of Washington: President, Dr. J. J. Woodward; Vice-Presidents, Dr. G. K. Barnes, J. E. Hilgard, J. C. Welling, William Taylor; Secretaries, J. N. Gill, C. E. Dutton; Treasurer, Cleveland Abbe.

HYPNOTISM.

A writer in the *Medical Record* sums up the result of his experiences of Hypnotism and its phenomena as follows:

First. Impressions cannot be communicated to individuals in the hypnotic condition, except through the external senses. The mind of the operator cannot influence that of the subject by a purely mental effort. He must either speak, write, or gesticulate to convey his ideas.

Second. Remembrance of what has passed, during the hypnotic state, in the mind of the subject, is very slight, but if he is told to remember any particular thing while so affected, he will recollect it when he awakens.

Third. Although I pursued the method used by others, I am satisfied that the employment of any means that will induce a temporary abstraction of the mind is all that is required to induce the peculiar condition.

Fourth. Although the subjects seem to be entirely oblivious to all that is going on, they are not perfectly so. In the case of a young lady, who was told that she was a bird, and thereupon commenced to hop, her dress became disarranged, and, although continuing to hop like a bird, she was careful to keep her dress in its proper condition.

Fifth. It is not necessary that the operator nor the one operated upon believe in the truth of hypnotism, or the success of the trial. If the necessary conditions are complied with the effect will follow. One case mentioned above proves this to be true.

All the strange psychical conditions under the names of hypnotism, magnetism, braidism, mesmerism, trance, somnambulism, ecstacy, etc., come under the same category, and I believe that clairvoyance and spiritualism can be included in the list.

As far as I have seen, I have never observed contraction of muscles, areas of hyperæsthesia, or other disorder of sensibility, or any unnatural condition or action of any part of the body in the persons affected, unless the operator should direct their attention to themselves by speaking or motioning to them; for example, he would indicate that their faces were away, that their arms or fingers were stiff, or that they had a pain in the head, back, or some other part. In such a case what was told them would be the basis on which they would feel or act.

If I should venture an explanation, or more properly a description of the phenomena of hypnotism, I would say that they resulted from a suspension of function of the centre for ideas in the brain of the subject, and also of his will, while the infra-cortical ganglia remain free to act from a reflex excitation imparted by the voice, gestures, or manners of the operator.

THE HAMMOND PRIZE.

The American Neurological Association offers a prize of five hundred dollars, to be known as the "William A. Hammond Prize," and to be awarded, at the meeting in June, 1882, to the author of the best essay on the *Functions of the Thalamus in Man.* The conditions under which the prize is to be awarded are as follows: 1. The prize is open to competitors of all nationalities. 2. The essays are to be based upon original observations and experiments on man and the lower animals. 3. The competing essays must be written in the English, French, or German language; if in the last, the manuscript is to be in the Italian handwriting. 4. Essays are to be sent (postage prepaid) to the Secretary of the Prize Committee, Dr. E. C. Seguin, No. 41 West Twentieth street, New York City, on or before February 1, 1882; each essay to be marked by a distinctive device or motto, and accompanied by a sealed envelope bearing the same device or motto, and containing the author's visiting card. 5. The

successful essay will be the property of the Association, which will assume the care of its publication. 6. Any intimation tending to reveal the authorship of any of the essays submitted, whether directly or indirectly conveyed to the Committee or to any member thereof, shall exclude the essay from competition. 7. The award of the prize will be announced by the undersigned Committee; and will be publicly declared by the President of the Association at the meeting in June, 1882. 8. The amount of the prize will be given to the successful competitor in gold coin of the United States, or, if he prefer it, in the shape of a gold medal bearing a suitable device and inscription.

Signed, { F. T. MILES, M.D., *Baltimore.*
J. S. JEWELL, M.D., *Chicago.*
E. C. SEGUIN, M.D., *New York.*

CHESAPEAKE ZOOLOGICAL LABORATORY.

Dr. W. K. Brooks, Director of the Chesapeake Zoological Laboratory, established under the auspices of the the Johns Hopkins University, in his report for 1880 states: By the liberality of the Trustees, it was possible to spend a much longer period than hitherto at the seaside, and provided with a more liberal outfit, including a steam launch which was built, for our use in the last spring, at Bristol, R. I., and has proved a very efficient auxiliary. The necessary books, dredges, and other instruments were also provided by the University. In addition to the opportunities afforded to three of the members of our own academic staff, three other gentlemen, devoted to the study of Zoology, were invited to avail themselves of the scientific facilities of the station.

The laboratory was opened at Beaufort, N. C., on April 23, 1880, and closed on September 30, after a session of twenty-three weeks. It was supplied with working accommodations for six investigators, and the facilities which it afforded were used by the following six persons: W. K. BROOKS, PH. D., Director; K. MITSUKURI, PH. B., Fellow in Biology; E. B. WILSON, PH. B., Fellow in Biology; F. W. KING, A. M., Professor of Natural Science, Wisconsin State Normal School; H. C. EVARTS, M. D., Academy of Natural Sciences, Philadelphia; H. F. OSBORNE, PH. D. Fellow of the College of New Jersey.

Beaufort was selected for our third season's work because it is the nearest accessible town, south of Baltimore, which is favorably situated for zoological study. The advantages of a location in a town are well shown by the fact that the expenses of a session of twenty-three weeks this year were considerably less than those of a ten weeks session the year before.

The scientific advantages of Beaufort are very great; the most important is the great difference between its fauna and that of our northern Atlantic coast.

The configuration of our coast line is such that Cape Hatteras, the most projecting point south of New York, deflects the warm water of the Gulf Stream away from the coast, and thus forms an abrupt barrier between a cold northern coast and a warm southern one. The fauna north of this barrier passes gradually into that of southern New England, while the fauna south of this barrier passes without any abrupt change into that of Florida, but the northern fauna is sharply separated by Cape Hatteras from the southern.

As the laboratory of the U. S. Fish Commission and Mr. Agassiz's laboratory at Newport afford opportunites for work upon the northern fauna, it seemed best for us to select a point south of Cape Hatteras in order to study the southern fauna with the same advantages, and as Beaufort is the only town near the Cape which can be reached without difficulty, it was chosen as the best place for the laboratory.

The situation of this town is exceptionally favorable for zoölogical work, for the surrounding waters present such a diversity of conditions that the fauna is unusually rich and varied.

Close to the town there are large sand bars, bare for miles at low tide, and abounding in animal life. From these we could collect an unfailing supply of *Amphioxus, Renilla; Limulus, Balanoglosus*, Sea Urchins, and a great variety of Molluscs and Crustacea.

The mud flats furnished us with another fauna, and yielded a great variety of Annelids, a new set of species of Crustacea and Molluscs, Gephyreans, Echinoderms, and Polyps. The large salt marshes gave us a third fauna, and a short distance inland large swamps of brackish and fresh water furnished still other conditions of life.

As the town is situated at the point where Gore Sound connects Pamlico Sound with Bogue Sound we were within easy reach of a continuous sheet of landlocked salt water more than a hundred miles long, and these Sounds furnished still another collecting and dredging ground, abounding in Corals, Gorgonias, Ascidians, Star Fish, Sea Urchins, and a new set of Molluscs and Crustacea.

As most of the shores are flat and sandy, those animals which live upon a sandy bottom are much more abundant than those which attach themselves to solid bodies, but the stone breakwaters at Fort Macon, the wharves at Beaufort and Morehead City, and the large oyster beds which are found in the sounds furnish a proper habitat for many fixed animals, and yielded us a rich supply of Hydroids, Corals, Ascidians, Sea Anemones, Sponges, Cirrhipeds, &c. The ocean beach, within a short distance of the town, furnished still another fauna, and a soil of three miles from the laboratory carried us to a good locality for ocean dredging.

The greatest advantage of the locality is the richness of its pelagic fauna. There are very few points upon land which are so situated that the surface animals of mid-ocean can be procured in abundance for laboratory work, and as careful work is very difficult on shipboard, a laboratory which can be furnished with a good supply of living pelagic animals presents opportunities for work in an extremely interesting and almost new field.

The Gulf Stream is constantly sweeping these animals northwards along the North Carolina coast, and as the tide sets in through Beaufort Inlet into the Sounds the floating animals are carried with it. Such oceanic animals as *Physalia* and *Porpita* were frequently thrown, uninjured and in perfect health, upon the beach within twenty feet of the laboratory, and during the season we found nearly all the Siphonophoræ which are known to occur upon our Atlantic coast.

With all these advantages we enjoyed a mild and uniform climate which enabled us to work in perfect comfort during the hottest months of summer.

The zoölogical resources of Beaufort have not escaped the attention of American naturalists, and there are few places upon our coast, outside of New England, where more zoölogical work has been done. In 1860, Drs. Stimpson and Gill spent a season in dredging and collecting in the vicinity of Beaufort, Cape Lookout and Cape Hatteras, and an account of their work was published in *The American Journal of Science.* Dr. Coues, who was stationed at Fort Macon during the war, occupied himself for two years in collecting the animals which are found here, and he published a series of papers on the "Natural Histsry of Fort Macon and Vicinity" in the Proceedings of the Academy of Natural Sciences of Philadelphia.

These papers, which were continued by Dr. Yarrow, contain copious and valuable notes on the habits and distribution of the animals which were observed, and we found them a great help to us. These two naturalists found four hundred and eighty species of animals in the vicinity of Beaufort. Of these four hundred and eighty, two hundred and ninety-eight are vertebrates, and one