The other book is a short pamphlet by Dr. U. Perronnet, and treats of mental suggestion. It is a very interesting little work, relating curious facts, and that seems to be appreciated by competent persons. Two works are in preparation on the same subject, — one by Dr. Ochorowitz; the other, by Dr. Baréty of Nice. These two works will be interesting, their authors being especially competent, which is not the case in many others recently published, and of which I prefer not to speak. V.

Paris, Sept. 14.

VIENNA LETTER.

A NEW and very sensitive test for cellulose and vegetable fibres has been described recently by Dr. Hans Molisch, an assistant at Professor Wiesner's phyto-physiological laboratory. It is based on the fact, that, by the action of water and concentrated sulphuric acid, cellulose is converted into sugar, or, to speak more correctly, into dextrine and dextrose: therefore vegetable fibres consisting mainly of cellulose exhibit indirectly the reactions of sugar. The importance of this new test for detecting adulterations of wool, etc., can easily be understood.

An important discovery in reference to cellulose has been made here. It was generally assumed till now that the occurrence of this body was restricted to the vegetable kingdom, and to a few families of invertebrated animals — viz., the Ascidia and Tunicata — containing tunicin, or animal cellulose, in their 'mantle.' Now, Mr. Ernst Freund claims to have found cellulose in the human blood and organs under particular pathological conditions. These conditions are produced by tuberculous disease. Taking into consideration some etiological facts, especially the effect of the quality of food on the spread of tuberculosis among the population, Freund was induced to examine if cellulose may be a chemical substratum for the formation of tuberculous growths. The tuberculous organs (lungs, spleen, miliary tubercles of the peritoneum) and blood, when treated properly, yielded an organic non-nitrogenous body, belonging, as it was proved by ultimate analysis, to the carbo-hydrates, and possessing all the properties of cellulose. In all the cases, — those taken from normal organs, and those afflicted by various non-tuberculous diseases, — Freund failed to find cellulose at all: therefore he feels himself compelled to conclude that cellulose is a typical constituent of tubercles and of the blood in tuberculosis.

The seventh meeting of the International congress of orientalists will be held here from Sept. 27 till Oct. 2. Many illustrious orientalists, especially Indians, will be present, more than three hundred and sixty members being already announced. The principal orientalists' associations will send their delegates. More than forty papers will be read, among them some on ethnological matters. The publication of the so-called 'Fajum papyros' found some years ago in Egypt, being now in possession of the Archduke Rainer, promises to be of great interest.

On Sept. 2 the highest European meteorological observatory was dedicated solemnly. It is situated on the Somblick Mountain (near Rauris, Salzburg), 3,103 metres above the sea-level, and consists of a tower and three other rooms. It is supplied with all the necessary meteorological instruments, and is connected by telephone with the nearest telegraph-office. Herr Rojacher, proprietor of the Rauris mines, has aided the progress of the work in a very munificent manner.

The number of medical students at the Vienna university is rapidly increasing. During the winter session just past, 2,407 ordinary and 266 extraordinary students were there matriculated. The minister of public instruction, therefore, issued a circular to the medical department of Vienna university, asking if the number of students would not have to be restricted by introducing a *numerus clausus*.

As I am now informed, the mantle of Auer von Welsbach's lamp, described already in a previous letter, is prepared by impregnating the gauze with solutions of salts of zirconia, oxides of lanthanum (and yttria). V. C.

Vienna, Sept. 14.

NOTES AND NEWS.

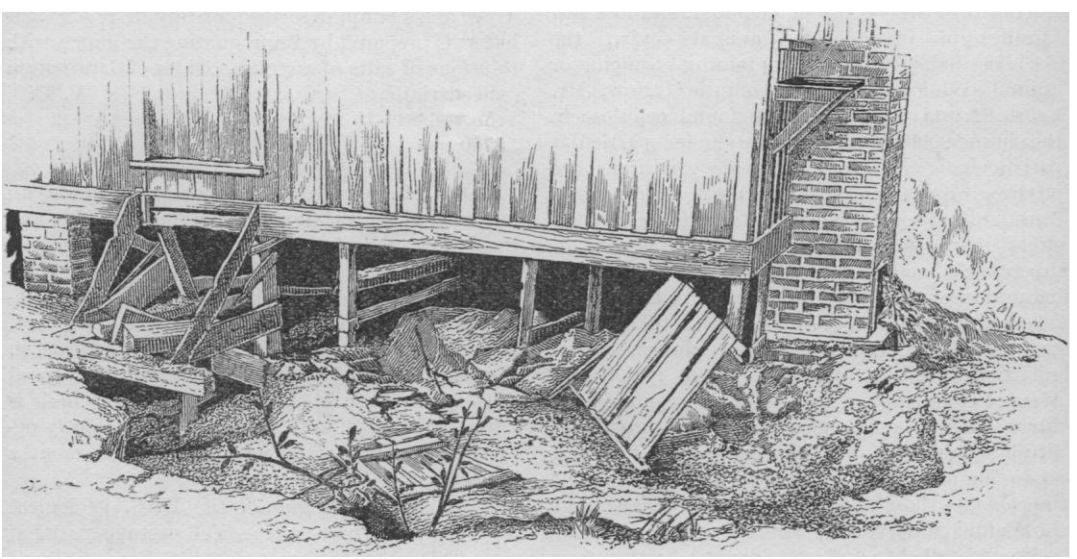
CASES of so-called hydrophobia, in which an interval of years elapses between the bite and the appearance of the disease, are to be regarded with suspicion. Dr. Jardin-Beaumetz, in a communication to the Conseil d'hygiène, gives the interval, or the period of incubation, as it is termed, as averaging between three and four months, in fifty-eight cases of hydrophobia in man, observed since 1881. A well-authenticated case, which is a striking exception to this rule, has recently occurred in France, in which nineteen months elapsed.

— Mr. Arnold Hague, of the U. S. geological survey, who is now in the Yellowstone national park, writes that the accounts which have appeared in various newspapers, of an outbreak of the Excelsior geyser coincident with the date of the recent earthquake that was so destructive at Charleston on Aug. 31, are entirely without foundation. He has been studying this geyser for the last four years,

and is confident, notwithstanding various reports to the contrary, that it has not played during that time.

Finlay on the 26th of September. Its position was, Sept. 26d. 8h. 3m., Greenwich mean time; right ascension, 17h. 2m. 5.9s.; declination, — 26° 4′ 6″.

HOUSE IN LINCOLNVILLE, SHOWING CHIMNEY-BASE CRUSHED BY UPWARD MOVEMENT OF THE EARTH.



SINK AT TEN-MILE HILL AFTER THE GREAT EARTHQUAKE.

— A cable despatch from the Cape of Good Hope through Dr. Krüger at Kiel, Germany, announces the discovery of a comet at the cape by Professor Finlay on the 26th of September. Its position was, Sept. 26d. 8h. 3m., Greenwich mean time; right ascension, 17h. 2m. 5.9s.; declination, — 26° 4′ 6″. Its daily motion was in the direction of increasing right ascension 2m. 20s., and toward the south 4′. It is described as circular, one minute of arc in

diameter, with some central condensation, and is very faint.

— A company in this city is endeavoring to perfect a process for the desiccation of garbage, with a view to utilizing the vast quantity of city refuse now dumped in the sea from garbage-scows. The matter to be treated is run through a shoot into one end of a revolving cylindrical oven about sixty feet long by ten or twelve feet in diameter. The oven, which is strongly constructed of boiler iron, is enclosed in a brick furnace, one end being higher than the other. A fire in the furnace keeps an equable heat in the oven, and the latter is slowly revolved by a steam-engine. The garbage or refuse enters at the elevated end, is thoroughly stirred and dried as it slowly travels from one end to the other of the revolving oven, and emerges from its lower end desiccated and inoffensive.

— Though there is nothing novel in the propulsion of boats by means of electric motors, the recent voyage of the electric launch Volta across the English Channel, from Dover to Calais and back, has attracted much attention. Many electrically propelled boats, deriving their motive power from primary or secondary batteries, have been experimented with by electricians; but heretofore these experiments have been confined to rivers or other bodies of comparatively smooth water. The honor of having made the first sea-voyage — brief though that voyage was — must be accorded Mr. A. Reckenzaun of London. Accompanied by nine other gentlemen, Mr. Reckenzaun left Dover at 10.40 A.M., Monday, Sept. 13, in the Volta, and reached Calais at 2.32 P.M. On the return trip, the party left Calais at 3.14, and arrived at Dover at 7.27. Taking into account the drift due to the tide, the total distance travelled was about fifty-four statute miles, the total running time being a few minutes over eight hours. The Volta is 37 feet long by 6 feet 10 inches beam, and is built of steel. The secondary battery, of sixty-one cells, weighing about four thousand pounds, was arranged along the bottom of the boat. The propellor is three-bladed, 20 inches in diameter, and 11 inches pitch, and was driven at a maximum speed of one thousand revolutions per minute by a duplex Reckenzaun motor, or, more accurately, two motors carried on one shaft. The motors weigh between seven and eight hundred pounds, and develop a maximum of sixteen horse-power.

— Large floating fields of pumice, thrown up by the great volcanic eruption at Krakatoa, Java, have been seen in the Indian Ocean, nearly seven hundred miles from where they were seen a year ago.

— Dr. Miller of Austria has been making some extremely valuable observations on the action of the stomach upon fungi. Inasmuch as one of the common methods by which zymotic diseases are believed to be produced is by the introduction of their germs into the alimentary canal, it can readily be seen that this investigation is replete with interest and importance. He finds that if these fungi, as, for instance, bacilli and bacteria, are introduced at the beginning of the meal, before the hydrochloric acid of the gastric juice is poured out by the stomach glands, they pass on to the intestine uninjured. If, however, they are taken into the stomach at a later time, when the reaction of the stomach is acid, they are destroyed. It has been satisfactorily demonstrated by numerous observations that persons were more likely to contract cholera when the stomach was diseased, or, as is commonly said, 'out of order.'

— We give this week two more illustrations showing the effects of the great earthquake. One is of a 'sink' at Ten-Mile Hill. These sinks were, in general, after-effects, being formed, as Professor McGee pointed out in the last number of *Science*, after the subsidence of the floods of water which came from the 'craterlets.' The other illustration shows a fallen house at Lincolnville. This is chiefly of interest as showing how, by a probable upward thrust of the earth, the base of the chimney, which offered the most resistance, was completely crushed.

— Dr. Charles L. Dana discusses in the *Forum* the question, 'Is life worth saving?' He places the value of an adult life to the state at at least $750, and its annual productive power at $95. One-half of all the deaths occur during the productive age, so that the two hundred thousand deaths at this period, which occur annually in the United States, represent an enormous loss to the country. It is also calculated that every death represents about two years of sickness, and that there are in this country about a million and a half persons sick all the time. In England and Wales it has been found that every workingman averages a week and a half of sickness in the year. It is estimated that the wage-loss from sickness in France is $70,000,000 each year, and from death $188,000,000.

— Mr. Mackellar, chief surgeon to the London police, has issued the following directions to the surgeons of divisions, for their guidance in treating persons bitten by rabid dogs: "When possible, a ligature to be applied above the part bitten; prompt and thorough suction of the wound, freely washing with water, and the application of absolute phenol (pure carbolic acid); the individual

sucking the wound (usually the patient himself) to spit out all the matter so sucked, and to freely wash out the mouth with water; should the wound be a punctured wound, make a crucial incision, promote and encourage bleeding, and treat as above." Mr. Mackellar condemns the use of nitrate of silver, and says the pain caused by the phenol is of short duration.

— *La nature* recommends the following method of cutting thick glass tubes: wind an iron wire half a millimetre in thickness around the glass tube, and connect it with a galvanic battery of sufficient power to raise the wire to a red heat; then put a few drops of water near the wire upon the glass; the latter will then crack in the direction of the wire, and, the thicker the glass, the more exact will be the fracture.

— Ten thousand cases of cholera occurred in Japan during the first six months of this year, of which 7,803 were fatal. During the preceding six months, 12,000 cases occurred, with 7,152 deaths. The disease is now prevailing in Osaka and Yokohama, the mortality varying from sixty to seventy-five per cent.

— The monthly bulletin published by the New York state board of health contains the following vital statistics: the reported mortality throughout the state during the month of June was 6,336, of which 35.3 per cent were under five years of age; 1,220 deaths were due to zymotic diseases, or 193.65 in 1,000 total mortality; the ratio per 1,000, of deaths from typhoid-fever, was 6.20; from diarrhoeal diseases, 73.80; from croup and diphtheria, 60.32; from consumption, 144.60.

— The examination and criticism of the last annual report of President Eliot of Harvard, that Prof. Andrew F. West of Princeton published in the *Independent*, has been issued in pamphlet form. It is chiefly devoted to refuting President Eliot's arguments in favor of the elective system as practised at Harvard.

— The collection of *Mémoires et documents scolaires publiés par le Musée pédagogique*, under the auspices of the department of public instruction in France, is to be enriched by a learned and curious *Répertoire des ouvrages pédagogiques du xvi^e siecle.*

— The *Journal des économistes* has been publishing articles describing the principal economic publications of the world. In a recent issue, M. Maurice Block, member of the institute, reviewed the publications other than French, and gave a most flattering notice of the *Political science quarterly* recently started by the faculty of the school of political science, Columbia college.

— Where accuracy is desired in the measurement of liquids, 'spoons' and 'drops' should be discarded. The ordinary teaspoon, which is presumed to hold a dram or sixty minims, in reality holds eighty, and can with a little care be made to hold one hundred and twenty minims, or twice what is ordinarily attributed to it. A drop is also a very indefinite quantity, — a fact of which any one can satisfy himself by dropping an equal number of drops of molasses and alcohol into a measure of known capacity, and comparing the amounts. The size of the drop is also materially affected by the vessel from which it is dropped. The 'minim' is a definite quantity, sixty of these making a dram, and should always be used, especially in dispensing medicine.

— The *Journal of reconstruction* states that an infant loses from three to six ounces in weight during the first four to six days after birth; by the seventh day it should have regained its birth-weight; from that to the fifth month it ought to gain about five ounces per week, or about six drams a day; after the fifth month, about four drams a day; at the fifth month it ought to have doubled its birth-weight, and in sixteen months quadrupled it.

— Carl Meyers made from the fair-grounds in Franklin, Penn., on Wednesday, Sept. 8, the first ascension known with natural gas, the balloon rising just one mile, and sailing about one hour.

LETTERS TO THE EDITOR.

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

Psychophysics.

MR. HYSLOP, in his article on 'Psychophysics' in *Science* for Sept. 17, charges the writers on that subject with laying claim to a scientific accuracy which they do not possess. Any such charge as this manifests so plainly a misconception of what psychophysics really professes and attempts, that a word of defence seems to be in place. The conclusion was drawn from the alleged incorrectness of Fechner's mathematical statement of the psychophysic law. From some admissions of M. Ribot regarding the same, Mr. Hyslop concludes that "such admissions prove fatal to any such exactness as is enjoyed by the physical sciences." Aside from the question of the truth or falsity of Fechner's statement of the law (Mr. Hyslop queerly admits that it is true), let it be observed that psychophysics, so far from professing to be a mathematical science, does not profess to be a science at all; but it does modestly claim to pursue a scientific method. This method, which, as Wundt explains, is peculiar to the physical sciences, is the experimental method. It does not differ from the old psychology, as Mr. Hyslop thinks, so much in having discarded introspection. Any psychology, even physiological psychology, must, by the nature of the case, be introspective. It differs fundamentally in this: that whereas the old psychology assumed the