The Barometer as a Guide to Health.

Dr. M. A. Veeder, of Lyons, N. Y., has been led by his observations to believe that the barometer may become an instrument of as great value in saving life as it is now in saving crops or ships. It is a familiar fact, he says, that many persons who are afflicted with rheumatism are able to foretell changes of the weather by means of the aches and pains that they experience. Persons who are subject to headache, also, are apt to suffer most when the mercury in the barometer is changing its level rapidly, as, for instance, before a thunder storm. The cause of these symptoms appears to be a difficulty in the adjustment of the volume and rate of the circulation of the blood to the varying atmospheric pressure upon the surface of the body. Ordinarily, the results are not serious, and but little attention is given to the subject. The question arises, however, as to whether there may not be a class of cases in which the movements of the mercury in the tube may become of great prognostic import. Dr. Veeder says that he has noted the occurrence of several deaths from apoplexy at times when rapid fluctuations of atmospheric pressure were indicated by the barometer; and he believes that at such times over-excitement, over-eating, improper clothing, and the like may induce consequences most disastrous to those who are predisposed to apoplexy, the weakened blood vessels being already subjected to unusual strain by reason of the unfavorable atmospheric conditions. Although the cases observed by the writer thus far are not numerous, yet he maintains that the probabilities with regard to the matter are such that it is the part of wisdom that those who are advanced in years, or subject to symptoms that indicate an apoplectic tendency, should be warned to exercise great moderation in all things, whenever the mercury is seen to be unusually active in its movements.—*Medical Record.*

Treatment of Diabetes.

Contrary to the general practice followed, Dr. Boucheron, in a note to the Academy of Sciences, advises diabetics to abstain from albuminoid food and alcohol, as well as from hydrocarbonized food. By this means, according to him, the sugar will disappear in three or four months. The boulimia and polydipsia are the first symptoms to give way, and strength will return with the general improvement.

SQUEAKY boots having proved a source of annoyance at pharmaceutical meetings, the *Chemist and Druggist* suggests their cure by the injection of powdered French chalk through a perforation in the inner sole, and adds that the free use of the same substance between the soles when boots are being made will effectually prevent any trouble of this nature.

PARENTY'S SMOKING MACHINE.

We reproduce herewith, from *La Nature*, an illustration of a novel apparatus, called by its inventor, Mr. Parenty, a "smoking machine." Tobacco manufacturers make their cigars out of quite a large number of different leaves, whose physical and chemical qualities have to be so combined as to yield an article that gives out an agreeable odor and burns well. Combustibility, then, is a physical quality that must be estimated for each variety of leaf. Such estimate is made by measuring the time during which a certain style of cigar, made solely from the tobacco to be tested, holds its fire without drawing on it a second time. In this comparative determination the intensity of the lighting is the element that has to be determined and regulated. To accomplish this is the object of the machine under consideration, which is so constructed as to imitate all the motions of a smoker, who, at regular intervals, would inhale a definite volume of air with a definite and constant force of suction.

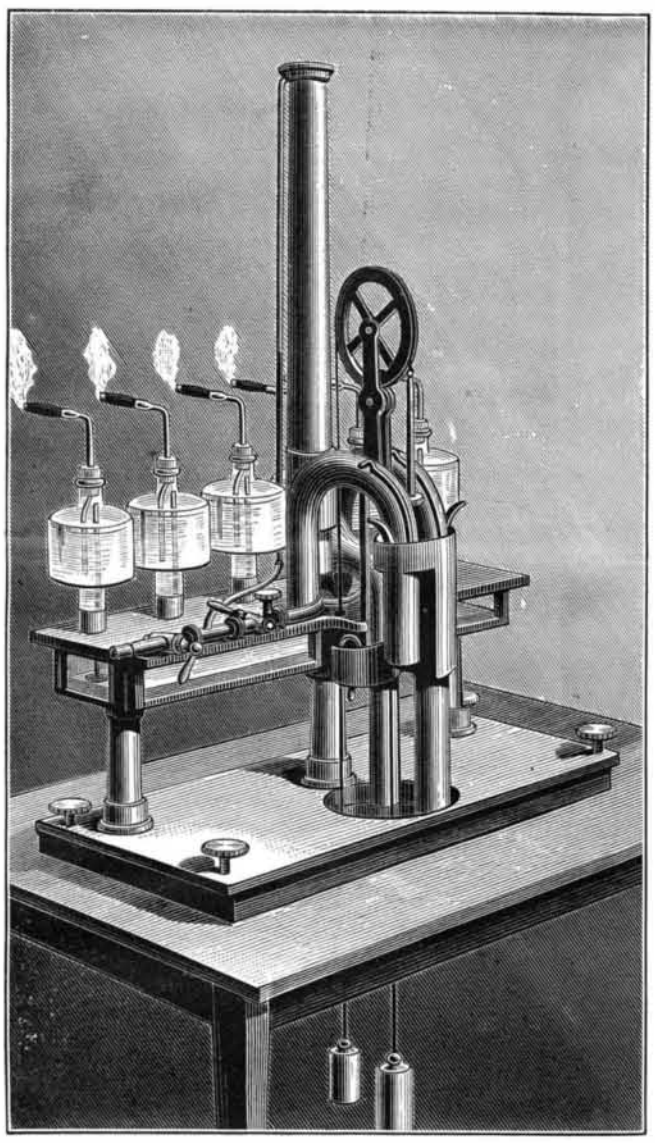

Fig. 1.—PARENTY'S SMOKING MACHINE.

The apparatus (Fig. 1) is fed by a constant level reservoir. The liquid enters continuously through an orifice whose narrow section, ω (Fig. 2), may be modified by means of a small regulating cone, V. The feed-pipe is provided with two cocks, R and R', with gauges, one of them graduated from one to three minutes and the other from three to ten, to show the interval between the beginning of two successive suctions. From the orifice, ω, the water enters the aspirator, *a*, which rests upon a reservoir, *b*, fed by the same orifice. When the water lowers in this system of communicating vessels, the smoke is sucked through the cigar holder tube, A; and, when it rises, the smoke is expelled through the tubes, B, which are alternately opened and closed by the water contained in the collector, C. This latter collects the smoke that comes from the aspirators, and holds the water designed for closing the bottom of the tubes, B. It is closed above by the aspirator box, and this latter is provided with a hydraulic joint that arrests the smoke and allows it to make its exit through the chimney, *g*, only. The variations in level that produce the successive inspirations and expirations are effected by means of two movable reservoirs, D and E, which are connected with the preceding parts by siphons, S_1 and S_2. These reservoirs are balanced by counterpoises, whose cords pass over pulleys, and they rise or fall according to the weight of water that they contain. One them, D, is divided into two compartments by a vertical partition, the first of which, D_1, communicates with the aspirator box through a siphon, S_1, while the second, D_2, connects the collector and the reservior, E, through a siphon, S_2.

The complete operation comprises four periods:

1. The aspirator, A, and the compartment, D_1, are full of water, as is also the connecting siphon, S_1. The water flows over the partition into compartment, D_1, and then runs through the siphon, S_2, into the collector, C, where the liquid reaches the extremity of the tube, B. At this moment the reservoir, D, contains a sufficient weight of water to make it descend and cause a suction. At the same time, the collector stops filling, and expels through the chimney the smoke that has been previously sucked in.

2. The reservoir, E, has likewise filled with water, and descends through its own weight and empties the collector and compartment, D_1.

3. The reservoir, D_1, being relieved, rises. The aspirator begins to fill with water, and the smoke expelled therefrom through the tube, B, enters the collector.

4. The reservoir, E, resumes its initial position under the action of a small siphon, S, at its upper part, which primes itself and frees it from the excess of liquid.

The apparatus operates, then, through the establishing by the siphons, S_1 and S_2, of two levels, n, n', and n_2 n_2', whose variations produce the above described effects.

For experimentation, we begin by making an approximate classification of cigars, each representing some variety of tobacco; this being done by lighting them at intervals of from 1½ to 2 minutes. As the resistance of the cigars to the passage of the air is unequal, the suction is made uniform before each lighting by means of a small cock, *v*, on the aspirator tube; and, in order to utilize the graduation of the gauges, the cock, R, is fixed in such a position that it shall be possible, though the cock, R', to bring about a coincidence between the two liquid levels at a common point of the graduations, this being three minutes.

After two successive suctions the cigar is fully lighted, and we then note by a chronometer the length of time that it burns. In a subsequent experiment, on grouping cigars of analogous combustibility, we endeavor to find out whether, after a determinate lighting, they are capable of holding their fire during an operation in which the suctions are regularly spaced at intervals fixed by the first classification. An identical motion may be communicated to any number of aspirators by the same motor. The apparatus shown in Fig. 1 is arranged for testing six cigars at once.

This ingenious apparatus, which does its inventor great credit, was presented to the Administration of Tobaccos in 1884, and excited great interest at the Anvers Exhibition.

Navigable Balloons.

The French Academy of Sciences received, at its sitting of the 23d of November, an interesting communication from Captain Renard on the subject of some experiments recently made by him with his navigable balloon. The memoir was received with great favor by the Academy, which decided that it should be inserted verbatim in the Transactions, although this is contrary to the general practice. The experiments described took place on the 22d of August and the 22d and 23d of September. The motor employed was a Grainme dynamo-electric machine making 3,000 revolutions a minute, and developing 9 horse power. The current actuating the machine was furnished by a battery, which constitutes the most interesting feature in the installation, but the arrangement of which is kept secret. To measure the velocities, Captain Renard employed a sort of aerial log formed of a small balloon of gold-beater's skin, and filled with 120 liters of common gas. This was held in equilibrium in the air, attached to the end of a silk thread 100 meters in length, and wound on a reel. To measure the speed, one end of the thread is wound round the finger, the time is noted when the balloon log is liberated, and the relative movement is recorded by the unwinding

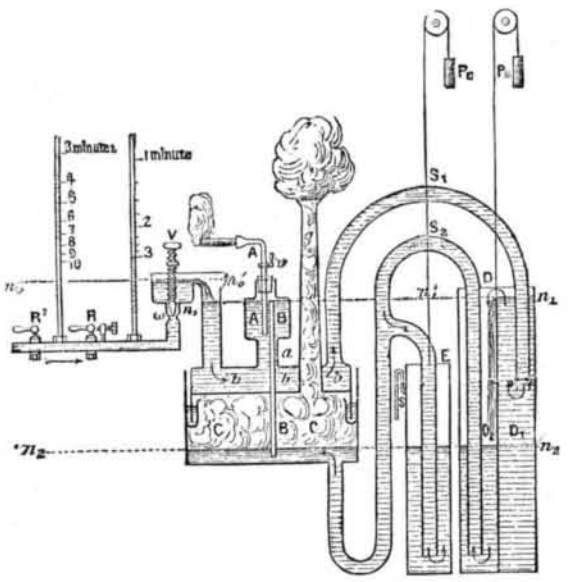

Fig. 2.—DETAILS OF THE APPARATUS.

of the thread from the reel. When the distance of 100 meters is traversed, a slight shock is felt on the finger holding the silk, and the moment is noted when this shock is felt. The time is thus recorded that the balloon has required to traverse 100 meters. On the 22d of September the speed of the wind was from 3 meters to 3·50 meters per second. The balloon left Chalais, carrying three persons, at 4:25 P.M., the sky being cloudy. It was steered against the wind, and at 5 P.M. arrived over the Ile de Billancourt with a speed of 6 meters per second, the Paris fortifications being reached at 5:12 P.M. At this moment M. Renard gave the order to return, which was done, and the balloon reached its point of departure in 11 minutes, while the outward journey had occupied 47 min. The maximum height attained was 400 meters. The day following, the same voyage was repeated in the presence of the Minister of War and the President of the Committee of Fortifications. There appears little doubt that M. Renard's experiments, so far as they went, were a complete success. The Minister of War has ordered the construction of a much larger balloon, for conducting experiments on a more extensive scale; these will take place next year.

Glass Flooring.

The substitution of glass flooring for boards continues to increase in Paris, this being especially the case in those business structures in which the cellars are used as offices. At the bank of the Credit Lyonnais, the whole of the ground in front is paved with large squares of roughened glass embedded in a strong iron frame, and in the cellars beneath there is sufficient light, even on dull days, to enable clerks to work without gas. The large central hall at the offices of the Comptoir d'Escompte has also been provided with this kind of flooring; and, although its prime cost is considerably greater than that of boards, glass is in the long run far cheaper, owing to its almost unlimited durability.