### Climatic Influence of Forests.

It is a popular induction that extensive forests or plantations promote the depression of moisture in the atmosphere, and that the removal of such growths, whether by felling or conflagration, makes a region dry and unfruitful, while their judicious cultivation and tendence keeps up or even creates the fertilizing rain supply. Of late years this view has been disputed, and at the present moment there is a controversy being carried on, mainly between German and American climatologists, as to whether it has any foundation in fact—whether it is not, like some other popular inductions, due to a misreading of natural phenomena or to a transposition of effect and cause. Gunther and Ebermayer, supported by English observers like Blandford, whose East Indian experience supplies many of the most significant data to the upholders of the popular view, are quite convinced that that view will ultimately be the scientifically accepted one. They point to the well known tree in the Canary Islands, which, standing alone, absorbs from the sea breeze the moisture with which it bedews the ground beneath; they cite the so-called rain trees of the tropics, which condense the watery vapor in such volume that they give it out in a kind of modified shower bath, which converts the soil around them into a swamp; and they adduce the authority of Fautrat, who has made comparative statistics of the condensing power of the different trees in European forests, and who shows that the best condensers are the firs, whose needles contain more than 50 per cent, while the foliage crowns of the leaved timber detain at most 42 per cent, of the water that descends on them.

These highly significant facts, however, do not constitute scientific proof, the materials for which are only of late years beginning to be compiled under the requisite conditions of period and locality. So far as they have gone, the researches of Brandis and Studnika may legitimately be claimed as tending to a provisional confirmation of the popular induction; and if they are ever to be set aside, or even modified, it must be by better observation and argument than those employed by their more strenuous transatlantic opponents. Even the ablest of these, Mr. Henry Gannett, does not deny a certain meteorological influence of forestculture on soil productiveness. He admits that land under tillage retains its moisture better than land not so treated, and that woods equalize temperatures and air currents and act as water reservoirs. But some of his divergences from the popular view are surely inadequately reasoned out; for example, that the great superficial area made up by leaves favors evaporation and sends back to the air a large proportion of the rain which, unintercepted, would go straight to the soil, which is thus impoverished of its due supply of moisture. To this objection Ebermayer can rejoin that evaporation in the forest is two and a half times less than outside it; nay, Clavé makes it as much as five times less. If we take into account the protective covering of the soil caused by the leaves that have been shed upon it, then, compared with the evaporation from the free or woodless ground, we get a diminution of more than 80 per cent! The practical question, however, lies not so much in the increase or diminution of the rainfall as in its distribution.

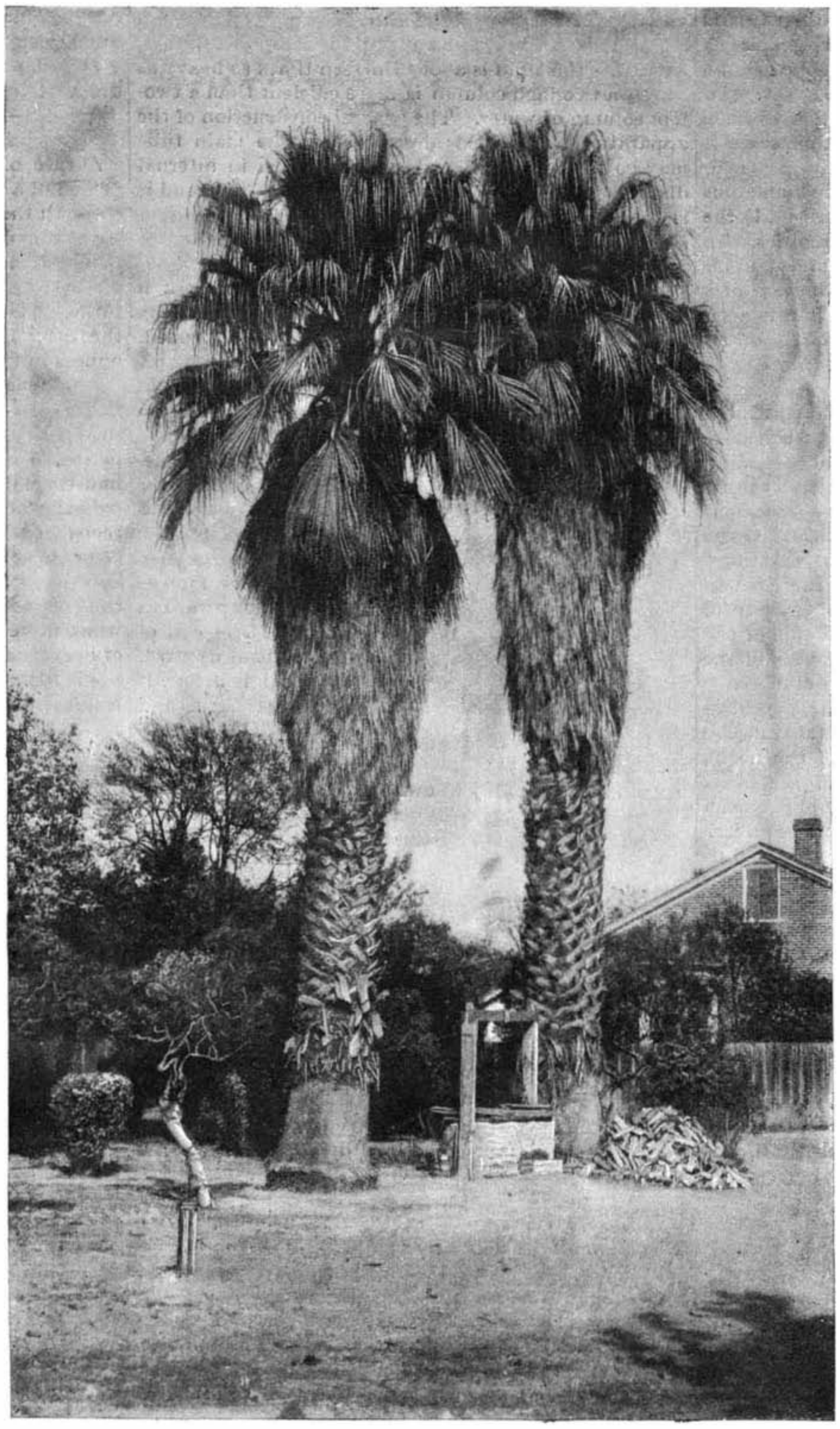
Van Bebber, in his work on the "Influence of Forest Growth on Climate," shows that wood culture increases the rainfall, but that it acts more favorably on the weather by promoting an equable distribution of the moisture and by obviating extremes of temperature. "This effect," says one of Gannett's German critics, "is left completely out of account in the American's investigations, and it is therefore quite possible that reafforesting, without notably increasing the annual volume of rainfall, may yet have considerably enhanced the fertilizing effect of the prairie showers. The old experience that the destruction of woods accentuates climatic extremes, and more especially enhances the danger of floods, has not thus far been contradicted. Nay, it receives calamitous confirmation in the disasters which, in the south Tyrol, for example, recur so frequently, and which it is vainly sought to prevent by artificial works." For the medical climatologist, as well as for the agriculturist, the further prosecution of the researches on the relation between forest growth and rainfall now so vigorously carried on in Germany is as practically important as it is theoretically interesting.—*The Lancet, London.*

### THE TWIN PALMS AND ANCIENT WELL OF LOS ANGELES.

The accompanying engraving is from a photograph taken by our correspondent, Mr. A. W. P. Kinney, of Los Angeles, and shows the "Twin Palms" on San Pedro Street, Los Angeles, Cal. Mr. Kinney says:

These trees are of the fan palm species, and are gigantic in size, being probably the largest in the United States.

It is supposed they were planted by some of the mission fathers who founded the old Spanish missions on the Pacific coast. They may be classed among the wonders of sunny California.



THE TWIN PALMS AND ANCIENT WELL OF LOS ANGELES.

They are about ninety-five feet in height and seven feet in diameter. Their age is variously estimated, but it is safe to say that they are over one hundred years old.

During this period they have witnessed the growth of Los Angeles from a Spanish pueblo of adobe huts to the metropolis of Southern California.

Near these palms there still may be seen a well of great antiquity, whose waters have refreshed, perhaps, many of the ancient Aztecs, the children of the sun.

The well and palms together form an interesting study for the historically inclined tourist and scientist, as well as the botanist and antiquarian.

---

MR. COE F. YOUNG, for many years vice-president and general manager of the Delaware and Hudson Canal Company, died at Thomasville, Ga., March 22, at the age of 65. He was appointed superintendent of the canal department of the company in 1865, and five years later became general manager of the railroad and canal systems, which position he held until three years ago.

### The Japanese as Colporteurs.

One embarrassment attending the colporteur work in Japan is due to the fact that any kind of trade has always been considered as degrading here. Persons engaged in trade are looked upon as beneath ordinary laborers, and next in rank to coolies or beggars. As the result of this, the business of the country is mostly in the hands of unscrupulous persons, with no reputation to gain or lose, and is conducted in a very loose and unsatisfactory way. There are but few merchants who appear to have a high sense of honor and a fixed price for their goods. The price demanded is usually adjusted to the supposed ability of the purchaser or the present need of money on the part of the seller. No foreign firms will trust the Japanese in business transactions, and every large establishment in Yokohama employs the Chinese to handle the money and watch for fraud.

Bible selling is also a kind of trade, and men who peddle Scriptures are generally classed with hucksters of all sorts. Those who engage in this business are usually without other means of support, and have no experience in our work or much idea of what we expect of them. They naturally adopt the usual methods of trade; and there is no end of trouble in teaching them to keep their accounts properly and deal honorably with all. It is a new departure in business to adhere strictly to the price marked in a book, and we have detected some of them putting in a new price on top of ours. It does not follow from a man's joining a church in Japan that he understands the art of selling Bibles after the methods in vogue at home. It is a matter of fact that Bibles are being sold in Tokio and Osaka constantly at less than our retail prices. One firm even advertises them at about *twenty per cent* less than the catalogue rate. Where they can procure them and by what means is more than I can tell. Of course, they refuse to let us know the process.—*H. Loomis, in the Bible Society Record.*

### To Make Sheet Wax.

Dr. H. E. Beach, Clarksville, Tenn., says: Take of pure, clean wax anywhere from one to five pounds, put in a tin bucket or any deep vessel, with clear water sufficient to fill it within two and a half inches of the top. Set on the stove till thoroughly melted, then set aside until partially cooled; skim all the air bubbles off. Then fill a smooth, straight bottle with ice water, a bucket of which you should have by you. Soap the bottle and dip it deliberately in the solution two or more times, according to the thickness you desire your wax. After the last dip, as soon as the wax hardens to whiteness, cut a line through it and remove it from the bottle as quickly as possible. Spread to cool and straighten out smooth while warm. Continue this process until all the wax is made into sheets.

Any office boy or girl can do the work, and make enough sheet wax in an hour—equal to any you can buy—to last a whole year. Paraffine, or paraffine and wax, may be made in the same way, and colored and perfumed to suit one's fancy. The water in the bottle should always be kept cold in order to get the best results.—*Archives of Dentistry.*

### Steel Pipe.

Public attention in this country having been called to the experiment of steel pipe manufacture in Glasgow, Scotland, the *Ohio Valley Manufacturer* says; "While our English cousins have finally 'caught on' to what is destined to be a great and important industry in the line of pipe manufacture in the world, it may not be entirely inappropriate to inform them that what to them is a new discovery is an accomplished fact on this side of the ocean. The manufacture of steel pipe has passed its experimental stage here, and is now both a successful and an acknowledged article of commerce. Its manufacture in this city was begun in August, 1887, and since that date some 15,000 tons have been manufactured and shipped into nearly every State and Territory in this country, and large quantities have been sent to Mexico. The Riverside Iron Works, of Wheeling, were the first, and up to the present time are, we believe, the only, manufacturers of steel pipe in America."

### Normal Sleep an Effect of Inhibition.

In the January and April numbers of the *Archives de Physiologie Normale et Pathologique*, Dr. Brown-Sequard has a paper in which he adduces the reasons that have led him to the conclusion that normal sleep is the effect of an inhibitory act. He says:

The theory according to which sleep depends upon a vascular contraction taking place in the cerebral lobes is, as I have long since shown, absolutely false. In fact, I have found that guinea pigs and rabbits, after a section of the two great sympathetic nerves, in the neck, sleep as if the cerebral circulation were in a normal state; that is to say, when it can cease through vascular contraction. The same is the case with dogs and cats after the upper cervical ganglion has been removed from one side, and the vago-sympathetic has been cut from the other. When, through these operations, the blood vessels of the brain have been paralyzed, it is evident that the sleep which then occurs not only does not depend upon a cerebral anæmia through vascular contraction, but may also exist despite the opposite state, that is to say, a hyperæmia, even a notable one. It is therefore certain that sleep may exist whether there is little or whether there is much blood in the vessels of the brain.

The loss of consciousness in sleep, as in numerous other accidental or pathological circumstances, is the effect of an inhibition of the cerebral faculties. To establish this opinion, I rely (1) upon direct proofs showing that the loss of consciousness, in the case of a puncture of the bulb and in other cases also, is beyond all dispute due to an inhibitory act; and (2) upon all that is known of the circumstances that precede or accompany sleep.

On this subject I shall limit myself to the statement that, just as in every inhibition, there exist, when sleep occurs and as long as it lasts, irritations at a distance from the organs in which the cessation of activity takes place. We find a proof of the existence of irritations in the following particularities: (1) What is called the need of sleeping, which consists in certain sensations, and particularly a feeling of heaviness in the eye; (2) persistent contraction of the pupil; (3) contraction of the palpebral orbicular muscles; (4) contraction of the inner and upper rectus muscles; (5) contraction of the blood vessels of the retina and of the cerebral lobes.

I add that, besides the inhibition of the psychical faculties, there is a special inhibition of certain muscles (muscle of the upper eyelid and muscles of the neck), and perhaps also a degree of inhibition of the heart and respiration. These various inhibitory phenomena associated with sleep well show the existence of an irritation somewhere, and perhaps at several points, during this periodic cessation of the intellectual activity.

The production of sleep in man in the experiment of Fleming and Waller (consisting in a pressure exerted at the same time upon the carotid, cervical sympathetic, and pneumogastric nerve) well shows that sleep may proceed from a peripheric irritation. To this fact, it is of consequence to add that which is well known regarding the somniferous influence of certain gastric irritations.

As for the seat of the irritation or irritations caused by sleep, I can say no more than this: (1) It is not probable that it is located in the brain properly so called, for, as we know, birds (especially the pigeon) sleep and awaken periodically after, as well as before, the ablation of their brain; (2) the reflex contractions and the paralytic inhibitions which are associated with sleep, if we consider them as due to irritations proceeding from the same point, much more probably have their seat in the excitable parts of the base of the encephalus than in the cerebral lobes.

Before concluding, I shall recall the fact that, in the epilepsy that I produce in guinea pigs, the loss of consciousness, like the convulsions, is easily caused by a peripheric irritation, and that it is thus so caused sometimes in the attacks of cerebral epilepsy in man. I shall recall also that the loss of all cerebral activity may occur through inhibition, as I have shown, under the influence of irritations, even very slight ones, of the base of the encephalus or of the spinal marrow, but especially of the point that Flourens has named the vital center.

From all these facts, there is no doubt that irritations, with various seats, exist during sleep, they having begun a little before the moment at which it supervenes. There is, then, every reason to accept as a fact that the phenomenon of ordinary sleep, that is to say, the loss of consciousness, is the effect of an inhibitory act.—*Revue de l'Hypnotisme.*

### The Electric Age.

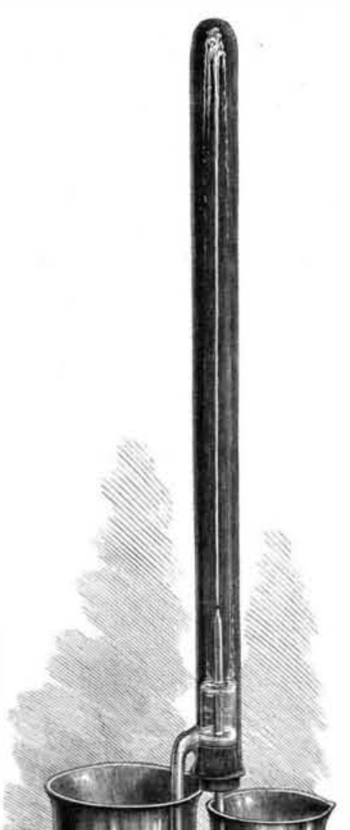
Professor Elisha Gray remarks that electrical science has made a greater advance in the last twenty years than in all the 6,000 historic years preceding. More is discovered in one day now than in a thousand years of the middle ages. We find all sorts of work for electricity to do. We make it carry our messages, drive our engine, ring our door bell, and scare the burglar; we take it as a medicine, light our gas with it, see by it, hear from it, talk with it, and now we are beginning to teach it to write.

### MERCURIAL JET SIPHON.

T. O'CONOR SLOANE, PH.D.

The ordinary jet siphon, reproducing to a certain extent the experiment of the fountain *in vacuo*, is one of more than ordinary interest. A descending column of water, acting as one member of a siphon, is caused to rarefy the air contained in a cylindrical vessel. At the same time water admitted through a jet in the base of the vessel forms a fountain. The descending column may be quite long, and there is no difficulty in producing a fountain two or three feet high, provided the vessel is large enough. This factor of height of fountain depends upon the length of the descending column, and is greater or less as the latter is longer or shorter. The water can never rise in the fountain to a height equal to the length of the actuating column, on account of friction.

In the cut accompanying this article a very pleasing variation upon this experiment is shown. The descending and actuating column of fluid is composed of mercury. As this fluid is about thirteen times as heavy as water, a two-inch column is more efficient than a two-foot column of water. The general construction of the apparatus hardly needs description. The main tube may be half or three quarters of an inch in internal diameter and fifteen inches high. At its upper end it is sealed. Its lower end is provided with a perforated India rubber cork. Through the aperture in the cork a small tube about six inches long is passed. At its upper end this tube is drawn out to a fine jet, great care being taken to have it true and symmetrical, so as to deliver a straight jet of water. Sealed into the side of the large tube is an outlet tube, carried downward as shown. The end of this is bent upward, or, what is better, it is left straight, and a U shaped piece is attached to it by a piece of India rubber tubing. The last construction is the less fragile of the two.



MERCURIAL JET SIPHON.

To use it, the India rubber cork is removed and the tube is inverted, and mercury is poured in to a depth of two or three inches. The cork, with its jet tube, is then replaced, and the finger is held firmly over its open end. The whole is then quickly inverted so that the end of the U-shaped discharge tube is simultaneously brought into or over a beaker or other vessel. Most of the mercury runs out, the bent tube preventing the access of air. Then the end of the jet tube, which hitherto has been kept closed with the finger, is placed under water contained in a second vessel, and the finger is removed. At once, under the influence of atmospheric pressure, the water enters the partially exhausted tube, and rises to its top, forming a fountain. The rest of the mercury gradually escapes, but the jet, if small enough, may last for several minutes.

The interesting feature is involved in the action of a column of liquid but a few inches long producing a jet over a foot in height. It represents the correlative of the experiment of the direct mercurial fountain, shown in the SCIENTIFIC AMERICAN of Oct. 23, 1886.

### Paraldehyde as a Hypnotic.

Dr. John Gordon gives in the *British Medical Journal* a valuable contribution to the study of paraldehyde, which is of special interest to us from the fact that the writer, before entering the medical profession, was a pharmacist of note in the North, and still retains his connection with pharmacy. The study of which we have here the results formed, we understand, the subject of the writer's doctorate thesis, and, as it places the hypnotic in a favorable position as a remedy, it is likely to create new interest in and further trial of paraldehyde. The drug was introduced by Dr. Cervello, of Palermo, in 1883, and after a year or two's fair trial has fallen into the rank of occasionally used remedies. Dr. Gordon, in his paper, shows that even in healthy individuals it produces short sleep, and in full doses—about 40 minims—given to individuals suffering from insomnia, it speedily produces a tranquil slumber. One good feature noticed was that the same dose was taken for some months with equally good hypnotic results; there was no marked craving for the drug; and as it does not, except in large doses, have a hypnotic effect on persons not suffering from sleeplessness, there is no probability of its abuse.

The action of the drug is speedy, patients generally falling asleep within ten minutes after its administration, and they may be aroused while under its influence without any disagreeable or confused sensations. It is not liable to disorder the digestion, although in many cases it is gently laxative in its action. No loss of appetite follows its use, nor headache, nor thirst. The most serviceable dose for adults is from 45 to 60 minims. Dr. Gordon's method of prescribing the drug is to well dilute it with cinnamon water, adding a little sirup of tolu and compound tincture of cardamoms. Sirup of lemon is also an agreeable combination. There is a good formula of this nature in "The Art of Dispensing." Dr. Gordon's paper contains, we may add, a very full account of the physiological action of the drug.—*Chemist and Druggist.*

### The Paraldehyde Habit.

A case of this kind is described as occurring in the person of a maiden lady of forty-two years of age who, through the assistance of her physician, was conducted from the use of morphine and chloral into that of paraldehyde, and he could get her no further. All attempts at abandoning the pernicious habit have been futile. The lady now consumes one ounce or more of the drug daily, and has taken as much as twenty ounces in twelve days. She cannot sleep unless under its influence, and when deprived of its use for a few hours she is languid, restless, miserable, suffering physical pain and mental depression, and she has no appetite. Unlike morphine deprivation, she has no exhausting diarrhœa, muscular tremors, or "electric pains," when without the paraldehyde, but, like all remedies which exercise marked psycho-neural restraint after long-continued use, the patient misses, in a marked and painful manner, the sudden withdrawal of the long-accustomed nerve impression. She has somewhat prematurely reached her menopause, and some of her irritability and debility may be due to that; but she is irritable, exhausted, and collapsed when the drug is not circulating in her blood.—*Alienist and Neurol.*

### The National Academy of Sciences.

This body held its annual meeting this year at the capital of the country, and the city of Washington was, for several days after April 16, a sort of Mecca of American scientists. The first paper read on the opening day was by Prof. Charles S. Pierce, of the Coast Survey, on "Sensations of Color." Another paper, by Prof. Wolcott Gibbs and Hobart Hare, gave an account of the methods and results of a systematic study of the action of differently related chemical compounds upon animals. Prof. Cope read a paper describing the mammals, reptiles, birds, and other animals found in fresh water deposits in Oregon, Nevada, and Utah.

At Wednesday's session the annual election of officers took place, Prof. O. C. Marsh, of New Haven, the present incumbent, being re-elected president, while Prof. S. P. Langley was elected to succeed Prof. Simon Newcomb as vice-president. The papers read included one on "Composite Chronology," by Prof. D. P. Todd, of Amherst, one on the "Determination of Gravity," by Prof. C. S. Pierce, and one on "North American Proboscidæ," by Prof. Cope.

At a following session six important papers were read, one by Asaph S. Hall, Jr., on "The Mass of Saturn," three by Professor Remsen, on "The Nature and Composition of Double Halides," "The Rate of Reduction of Nitro-Compounds," and "The Connection between Taste and Chemical Composition," one by Professor Mendenhall, upon recent researches in atmospheric electricity, and one by Professor A. A. Michelsen, on "Measurement of Light Waves."

On the last day of the meeting, April 19, Prof. Michelsen read an interesting paper on "The Feasibility of the Establishment of a Light Wave as the Ultimate Standard of Length," and Prof. S. C. Chandler, of New Haven, one on the general laws pertaining to stellar variations. Dr. J. S. Newberry, of Columbia College, presented a paper, with elaborate illustrations, on the cretaceous flora of North America, and another paper was by Prof. Cleveland Abbe, on "Terrestrial Magnetism."

Prof. Asaph Hall was re-elected secretary of the Academy, and the council for the ensuing year are: Prof. Geo. J. Brush, mineralogist, of New Haven; Prof. B. A. Gould, astronomer, Cambridge; Prof. Ira Remsen, chemist, Johns Hopkins University; and Gen. M. C. Meigs, Washington.

The newly made academicians include two astronomers, Prof. Lewis Ross, of the Dudley Observatory, Albany, N. Y., and Prof. Charles S. Hastings, of the Sheffield Scientific School, New Haven; one paleontologist, Dr. Charles A. White, of the United States Geological Survey; one botanist, Prof. Sereno Watson, of Harvard; and a chemist, Prof. Arthur Michels, of Tufts College.