SCIENCE:

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PROFESSOR WATSON'S SUCCESSOR.

Prof. E. S. Holden, U. S. N., has been detached from the Naval Observatory, and granted a year's leave of absence, in order to take charge of the Washburn Observatory, of the University of Wisconsin.

The sudden death of Prof. Watson left his plans in a very unfinished state. He had partially completed, at his own expense, a "solar observatory" which bears his name. His plan was new, and he intended to re-discover the intramercurial planet, Vulcan, which he reported during the total eclipse of 1878. At the bottom of a hill, sloping at an angle of about forty-five degrees, a small building with a deep cellar was built. A tunnel about eighteen inches in diameter and fifty-five feet long, parallel to the earth's axis, connects this cellar with a pier at the top of the hill which is to support a heliostat. As the tube is pointed directly towards the north pole, it is necessary to give the heliostat but one motion in order to keep the sun in the field of view of the observing telescope placed in the cellar at the bottom of the hill. The object of the long tube was to cut off as much of the stray light as possible, and to enable the observer to examine objects close to the sun's limb.

The Washburn Observatory is provided with an excellent 16-inch Clark equatorial, which is ready for work. Fauth & Co., of Washington, are making a good 3-inch transit instrument, similar to that of the Princeton College Observatory, and it is probable that later a 6-inch meridian circle will be ordered from Repsolds, of Hamburg.

The work to be carried on for the coming year consists, mainly, of a systematic review of the heavens, following up Herschel's work. It is probable that this work will be done by Professor Holden and Mr. S. W. Burnham, in concert. The transit instrument will be used by Mr. G. C. Comstock in maintaing a time-service, and incidentally in obtaining a set of Right Ascensions of the sun, and an extended series of observations of Polaris.

The State of Wisconsin has provided for the printing of the publications of the Observatory. The volumes will be issued at irregular intervals. No. I. will be a History of the Observatory under Prof. Watson's administration, together with the reduction tables prepared by his directions, and No. II. will probably contain Burnham's General Catalogue of Double Stars for 1880.

It is said that during the memorable battle of Waterloo, competent judges pronounced Wellington more than once a defeated general, and that, according to the rules of war, he should have retreated on Brussels. But Napoleon looked in vain from La Belle Alliance to see his foes fleeing before him, for Wellington had given the order "*stand fast, we must not be beaten*," and in a few hours he was marching victoriously on the road to Paris.

During the last twelve months we have heard much of another man, who was supposed to be defeated in every point, and was reported by the English scientific press to have abandoned the battle field at Menlo Park, and to be slowly retiring on California. Professional men and others, who accepted such views on the subject, have from time to time, with a persistence worthy of a better cause, proclaimed aloud that Edison was beaten, and that, in their opinion, his whole system of electrical lighting must end in failure.

But Edison, like Wellington, in the midst of many difficulties, merely closed up his ranks and gave the order "*we must not be beaten!*" The historical parallel may be carried further; Edison may be said to have marched on Paris, and entered the enemy's Capitol, for having accomplished his task at Menlo Park, and perfected his system of electric lighting in all its details with the most perfect success, we now find him installed in sumptuous offices in Fifth avenue, New York city, putting into practical operation the full results of his previous experiments.

A company has been formed which will control and place Edison's system of electrical lighting on the market, but "the Master" will himself superintend all the details of the construction department, until a district has been finally laid out and found to be working satisfactorily. Progress has been made in this direction, and the Edison lamps are being placed in position as fast as they can be produced at Menlo Park, under the direction of Mr. Upton.

Taking a retrospective view of the last eighteen months, one may well pause to ponder over the immense amount of work accomplished by Edison during

that period. Scientific investigations of the most complicated nature have been successfully carried on, the ordinary beaten paths of research of the Chemist, the Engineer and the Electrician have been cast aside, and original methods of exploring the whole domain of science employed with indefatigable perseverance. The very text books and scientific literature on which others have relied, proving unreliable, were rejected, and Nature, at its fountain head, consulted in solving the these problems.

With such methods and indomitable will, and with the constant and valued co-operation of Mr. Charles Batchelor and Mr. Francis R. Upton, the great work has been successfully accomplished.

The arrival of Edison in New York with his corps of skilled electricians and engineers, occurs at an opportune moment. Deaths from suffocation caused by the escape of the ordinary illuminating gas have multiplied of late, and as we now write the bodies of two women who have died from this cause, await burial. During the last few days a building on Broadway suffered from a violent explosion of illuminating gas, making the second within a few weeks. In the first instance many persons were injured, and in the more recent case one hundred persons escaped death only by the force of the explosion taking a fortunate direction. With the acceptance of Edison's system of electric illumination, these dangers to health and life, to which we have been so long exposed, become as things of the past, except where voluntarily encountered, and to this extent Edison may claim to have conferred a benefit to which the whole world will be heir.

We are under obligations to the Marchioness Lanza for a fine translation of a paper by the renowned Professor Rudolph Virchow, of Berlin, entitled "*Organic Healing Power*." This paper, involving many points of general scientific interest, will be produced in our next issue.

Virchow is now in his 61st year, and it is 36 years since he was challenged by Count Von Bismarck to fight a duel, on account of Virchow (who was an advanced liberal) having defeated Bismarck's project to obtain money from the Parliament to create a German navy.

AMERICAN CHEMICAL SOCIETY.

The February meeting of the American Chemical Society was held on Friday evening, February 11, 1881. The meeting was called to order by Vice-President Leeds, after which the following gentlemen were duly elected members of the society, viz.: Messrs. N. Gerber, James F. Slade, Theodore M. Hopkey, Professor F. N. Venable, and E. K. Dunham. Dr. E. R. Squibb then took the chair and Professor A. R. Leeds read the following papers:

I. Upon the invariable production, not only of ozone and hydrogen peroxide, but also of ammonium nitrate in the ozonation of purified air by moist phosphorous.

II. Upon the action of ozone, oxygen and nascent oxygen upon benzine.

III. On a new class of aromatic sulphurous acids.

Mr. J. H. Stebbins, Jr., followed with some remarks on tetra-azo-compounds, substances to which he has paid particular attention, for it will be recollected that a whole series of the di-azo-colors were originally produced by him.

Professor W. G. Levison then gave the Society the results of some recent experiments by him on polarized light. On the conclusion of this paper, the society was adjourned. M. B.

New York, February 17, 1881.

NEW YORK MICROSCOPICAL SOCIETY.

The third annual reception of the New York Microscopical Society was held on February 14th, 1881, at the rooms of the Academy of Sciences. The annual address of the President was delivered by Professor R. Hitchcock, who selected as his subject: "The Relations of Science to Modern Thought," on the conclusion of which the meeting resolved into a *conversazione*, when a variety of interesting but familiar objects were exhibited.

THE annual meeting of the German Chemical Society took place December 22, 1880, on which occasion the following officers were elected for the present year: President, A. Baeyer; Vice-Presidents, A. W. Hofmann, L. v. Barth, F. Hoppe-Seyler, H. Landolt; Secretaries, F. Tieman, A. Pinner; Vice-Secretaries, E. Bauman, Eug. Sell; Treasurer, J. F. Holtze; Librarian, S. Gabriel. M. B.

THE SOCIETY OF TELEGRAPH ENGINEERS, (England).

On Wednesday, last week, Prof. G. C. Foster, F. R. S., president, read his inaugural address before the Society of Telegraph Engineers and Electricians, the principal thing dwelt upon being the practical importance of a trustworthy system of electrical measurements. The Society, he said, was not merely a professional one, but was concerned with the scientific principles which underlie the practical operations of electricity. The present practical applications of electricity owed their existence to scientific discoveries made just over 60 years ago. Reference was made to the investigations of Oersted in 1820, and Davy in 1821. Induced electrical currents enabled the electric light to cease to be a scientific marvel and become of practical interest to municipal corporations and limited liability companies. Davy first produced an electric light by the passage of currents from a battery of 2000 cells between carbon points. Oersted, Ampère, and Faraday traced out the fundamental laws of the phenomena of induction. In the ordinary course of scientific discovery, the qualitative aspects of phenomena first attracted attention. Quantitative knowledge followed later by degrees. "Absolute values of constants" could only be given when a phenomenon was sufficiently well known for its laws to be expressed in definite mathematical formulæ, or when methods for the determination of such values could be devised. But when definite results had to be produced as part of a commercial undertaking, that point became of the utmost importance from the very first. Examples were given. During the past 100 years an unknown large number of electrical machines had been made for more or less scientific purposes; but after all that experience it was a question as to who could draw up a specification for an electrical machine which should, with a given number of revolu-