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SCIENTIFIC AMERICAN SUPPLEMENT

No. 629.

For the Week Ending January 21, 1888.

Price 10 cents. For sale by all newsdealers.

THE INDIANA PATENT BILL.

Hon. Mr. Holman, of Indiana, has introduced the following bill in the House of Representatives, No. 1344:

"A BILL TO SECURE TO THE PUBLIC THE USE OF PATENTED INVENTIONS.

"Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That all persons or corporations, whether owners or licensees of patents granted by the United States, are prohibited from withdrawing any machine or process from public use because of any regulation of the tariff of charges by the legislature of any State or Territory wherein such machine or process is being used, without the consent of such legislature."

The same bill was introduced at the last session of Congress by the same member, but failed to pass, and we earnestly hope this renewed attempt will share the same fate.

If this bill should pass, it would be within the power of any State or Territorial legislature to subject citizens to the most serious losses. Among the first to suffer would be widows and orphans. All who hold investments in patented properties would be liable to be robbed of their incomes, the same as already has happened in Indiana with the telephone owners.

The Supreme Court of the United States decided long ago that all State laws for regulating the sale or disposition of patented inventions were unconstitutional and void, for the reason that the exclusive authority in such matters is by the Constitution exclusively vested in the Congress.

For some unexplained reason, the authorities of the State of Indiana have for years treated the Supreme Court decisions with contempt, and there are to-day among the Indiana statutes several laws relating to patents that are at variance with the paramount authority of the United States. The most recent Indianian effort in this line is the State law that regulates the price at which patented telephones may be sold. The law specifies that no telephone company shall charge more than $3 a month for use of same; thus taking entirely away from the patentee all voice in or control of his invention. The validity of this law has been sustained by the highest tribunal of the State of Indiana, and is now in force there. The result is that the Bell telephone companies in several of the cities of the State were obliged to withdraw their instruments from use, as the amount allowed by the local law was not sufficient to pay them any profit.

Indiana has profited vastly, in common with all of the States, from the many new industries and manufactures which inventive genius has created and given the country. The industrial prosperity of the State is largely based upon tne wealth which has been brought in to her by the use of new improvements and inventions. If they are to be withdrawn or discouraged, property values must necessarily decline, and manufacturing industries must be removed to more congenial places.

ELECTRIC ENERGY FROM CARBON WITHOUT HEAT.

In SUPPLEMENT, No. 629, issued this week, we print a paper with the above title by the well known electrician, Mr. Willard E. Case. It gives the details of an investigation of a platinum-carbon battery. Carbon in various forms was experimented with as a positive plate of a voltaic couple, while platinum was used as the negative element. An oxidizing solution, formed by mixing chlorate of potash and sulphuric acid, was used as exciter and solvent for the carbon, and a current was obtained. The active agent in the solution was ascertained to be ClO_2, or peroxide of chlorine.

Various changes in the carbon electrode and in the solution gave different electromotive forces, a range from ·08 to 1·25 volt being obtained. These results were obtained without any heat, and in them the investigator sees a possibility of evading the second law of thermodynamics. As the carbon is burned without heat, and the energy set free is converted directly into mechanical energy, he hopes to obtain a far higher return for carbon consumed than is possible with the steam or heat engine and dynamo, where, at most, but fifteen per cent of the heat of the carbon can be converted into mechanical energy, and where a further loss is encountered in the conversion of this into electric energy.

So far the investigation has not assumed a practical form, but it will be a triumph of theory if we are able to effect this direct conversion of the heat energy of carbon combining with oxygen into electricity. Many points are not touched upon by the author. He does not say whether his platinum was completely protected by the carbon, or whether bubbles of carbonic acid gas escaped from the dissolving carbon. The investigation indicates a most interesting line of experiment and one which we can but hope will be carried out to some result that will have a bearing on practice. The solutions used are too expensive to give the present experiments more than a scientific interest. But at least they open a door for future work that may yet produce a carbon-consuming battery that will supplant the present type.

Incidentally another point is strongly brought out. It is that the expense of working a battery is not only due to the consumption of the positive element, which is generally zinc, but that the cost of the solution may have just as much to do with it. It shows that there is room for vast improvements on primary batteries. Electricians may yet find themselves wrong in so generally considering the subject of the economical use of primary batteries in competition with dynamos a wild and impracticable theme for work and study.

SUCCESS OF THE MILLION-DOLLAR TELESCOPE.

The great refracting telescope of the Lick Observatory, Mount Hamilton, Cal., is now in place, and had its first "official" trial on the evening of the 7th inst. The sky was clear and the weather cool. The big telescope was at first pointed at the nebula in the constellation Orion, which appeared to Messrs. Clark, Swazy, Keeler, and Floyd more magnificent than ever before. About 12 o'clock Saturn was also observed, with satisfaction. Only medium power was used, and the observation closed about midnight.

The size of the object glass is 36 inches. It is the most powerful telescope in the world. A magnifying power of 2,000 diameters, it is expected, can be employed on suitable objects. Applied to the moon, it is believed the new telescope will show almost anything that has a bulk of say 300 feet square. If there are any such buildings on the moon as the capitol of the United States, or such works as the Brooklyn bridge, rivers or oceans with large vessels upon them, the great telescope will reveal the fact. But unless all previous observations are greatly at fault, no water, no atmosphere, no people, exist on the moon like those of our globe. Much new and interesting knowledge may, however, be hoped for in respect to the moon and the heavenly bodies when the new instrument is fully worked.

A dispatch to the *N. Y. Herald* says that on the night of the 10th inst. at the Lick Observatory the cold was so intense as to freeze the dome of the observatory and prevent easy observation. However, several short trials were made. The most important was by Captain Floyd and Professor Keeler, who saw the eight rings of Saturn clearly divided. Professor Keeler had an unexcelled view of a division of the outer ring of Saturn on the night of the 7th.

A few nights ago Captain Floyd and others were looking at the constellation Orion, when he detected a little star in the trapezium which is in the sword of Orion. Mr. Clark, on looking, also said he saw the star. No star has ever before been seen in the trapezium.

Saturn and Neptune are the only planets that have been so far viewed, the other principal planets having not yet been in good position at a comfortable hour.

Apprentices of Past and Present Days.

The *Carriage Monthly* thus contrasts the apprentice of former times to those of the present:

Apprentices of the present generation are ignorant of the hardships and misfortunes of the boys in by-gone days. The latter were members of the master's family, boarding and sleeping with them. Part of his business was to mind the children, if there was any, run all the errands for the household and shop from 5 o'clock in the morning until 7 o'clock in the evening, and sometimes even later than that. Many of the boys of the present day do not believe this, but it is nevertheless true. The boy had to stay as long as the agreement made called for, and if he ran away he was considered an outcast. If the parents of the boy could raise a certain sum, the term of the apprenticeship was shortened according to the amount of money paid. In time these boys became good mechanics, obtaining a thorough knowledge of their trade.

The apprentice of to-day is considered equal in standing with the mechanic. He commences work at 7 o'clock in the morning and quits at 6 in the evening, in some cases earlier, and is never kept over his regular time. The employer treats him the same as he does his workmen, sometimes better, and he is paid either by agreement or what he is worth. There are many who still would like to see the old apprenticeship system of fifty years ago in force again.

Curious Geological Phenomena.

The Cordillera of the Andes has for some time been exhibiting a curious phenomenon. It results from observations made upon the altitudes of the most important points, that their height is gradually diminishing.

Quito, which in 1745 was 9,596 feet above the level of the sea, was only 9,570 feet in 1803, 9,567 in 1831, and scarcely 9,520 in 1867. The altitude of Quito has therefore diminished by 76 feet in the space of 122 years. Another peak, the Pichincha, has diminished by 218 feet during the same period, and its crater has descended 425 feet in the last 25 years. That of Antisana has sunk 165 feet in 64 years.—*La Gazette Geographique.*