

Scientific American.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS.

One copy, one year, postage included. \$3 20
One copy, six months, postage included. 1 60

Club Rates:

Ten copies, one year, each \$2 70, postage included. \$27 00
Over ten copies, same rate each, postage included. 2 70

By the new law, postage is payable in advance by the publishers, and the subscriber then receives the paper free of charge.

NOTE.—Persons subscribing will please to give their full names, and Post Office and State address, plainly written, and also state at which time they wish their subscriptions to commence, otherwise the paper will be sent from the receipt of the order. When requested, the numbers can be supplied from January 1st, when the volume commenced. In case of changing residence, state former address, as well as give the new one. No changes can be made unless the former address is given.

VOLUME XXXII., No 16. [NEW SERIES.] Thirtieth Year.

NEW YORK, SATURDAY, APRIL 17, 1875.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agate, Air heating, Answers to correspondents, Barker's mills, Battery carbons, etc., with page numbers.

TRADE MARKS.

The law presents to every one inducements and facilities for honest effort. The inventor of a new manufacture is, by way of compensation, secured in the exclusive right to make, use, and sell the same for a limited number of years.

But without having created a new entity, he may wish to engage in manufacturing some special commodity, and by his skill and honesty may seek to establish a reputation that shall secure a preference for his goods over those of any of his competitors. This reputation is a property in which the law also aims to protect him.

Any mark or device attached to his goods is sufficient for this purpose. A word or a symbol is generally selected for thus designating them, and this constitutes what is known as a "trade mark."

The statute in relation to trade marks operates in aid of the common law on this subject—modifying it to some extent, fixing specifically the penalties attached to transgression, facilitating the giving of the requisite testimony in any remedial proceedings, and providing for a registration which fixes at once the rights of the proprietor, of which every one is bound to take notice at his own peril.

The Commissioner of Patents is prohibited from receiving and recording any proposed trade mark which cannot lawfully

become such. This condition refers to the rules and principles on this subject which are dictated by reason, and especially those which have been adopted by the courts.

One of these rules prescribes that the name sought to be used as a trade mark should not be descriptive. If one should seek to appropriate the word "inexplosive" as a trade mark on his preparation of an illuminating fluid, or the word "indelible" on a new marking ink, such a trade mark would not be received or recorded at the Patent Office, or sustained by the courts as legitimate.

Again it has been held that the name of any particular locality could not, as a general rule, be selected as a legal trade mark. A party who had sought to appropriate the name "Lackawanna" as a trade mark for his anthracite coal, was not sustained in that attempt by the highest of our courts (see Canal Company vs. Clark, 1 Official Gazette, p. 279.)

For a similar reason, the statute prohibits the registration of a trade mark which is merely the name of a person, firm, or corporation, unless such name is accompanied by a mark sufficient to distinguish it from the same name when used by other persons.

But it must not be supposed that any one can with impunity attach a name to his productions, although such name could not have been appropriated by any other person as a trade mark. The great underlying rule that fraud will not be allowed to achieve success, wherever it can be detected, will interpose to prevent the consummation of an effort to compass its ends by falsehood or deception.

A trade mark then should be novel, that is to say, so far differing from any one previously attached to a like commodity that there will be no danger of causing deception; it should not be descriptive of the quality of the goods to which it is attached; it should not consist merely of the name of any person, firm, corporation, or locality; and finally it should not be attempted to be used for an immoral or illegal purpose.

These rules are believed to be sufficient to serve as guides in most of the cases which shall present themselves to the mind of the honest inquirer.

HOME NEWS BY WAY OF THE SUN.

"Go abroad to learn the news" is a very old saying. Just now the study of the sun's constitution furnishes a remarkable verification of the correctness of the proverb: that far away orb affording a better and closer view of the early stages of the earth's development than could possibly be gained at home.

It is well known that the elements which compose the earth and its atmosphere are very unequally distributed. Of the part which we are acquainted with, oxygen constitutes by weight fully one half. Silicon makes up a quarter. Aluminum, calcium, magnesium, potassium, sodium, iron, and carbon, in decreasing proportions, constitute nine tenths of the remaining quarter.

How did it happen that a few of the elements are provided so plentifully for us, while there is such a scanty provision of the rest? And why are the useful metals chiefly hidden in the depths?

The Pope, the Turk, and—not the devil, as the old litanyes

ran, but his chief opponents—the clergymen, (some of them at least) reply: "It is the will of God," and that ends the inquiry with them. But Science rests with no such thought-repressing dogma. Present conditions are, because some other conditions were: what were those conditions? In pursuit of the answer to this question scientific men stop at nothing short of "interviewing" the Universe.

It appears to be pretty conclusively shown, by spectroscopic analysis of the sun's light, that the following twenty terrestrial elements (with indications of perhaps two otherwise unknown elements which need not be taken into this account) exist in the sun's atmosphere:

Table with 4 columns: Aluminum, Barium, Cadmium, Calcium, Cerium, Chromium, Cobalt, Copper, Hydrogen, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Sodium, Strontium, Titanium, Uranium, Zinc.

These various substances are not indiscriminately mixed in the vapors which surround the sun. Thanks to the interposing face of the moon in total eclipses, it is possible to study the sun's atmosphere in sections, so to speak: by which study it appears that, by virtue of the high temperature which prevails there, and the varying specific gravity of the different elements, the latter are enabled to arrange themselves in layers, in spite of the storms and gaseous outbursts which would tend to disturb their positions.

Theoretically the metalloids should lie, as a group, outside the metallic atmosphere: and Mr. Lockyer has submitted some evidence to show that they probably do, explaining why, under the conditions which prevail, their record among the Fraunhofer lines should be a feeble one, and insisting that, in the lack of such lines, we have no argument against the presence of some quantity of the metalloids in the sun, although that quantity may be small.

Assuming, in accordance with the nebular hypothesis, that the earth was once in the condition which the sun now presents, we can readily understand why its chemical constitution should be what it is. From the known behavior of the elements, it is inferable that, as the external metalloidal vapors cooled, they would condense and fall upon the underlying layer forming these binary compounds capable of existing at a high temperature, such as the vapors of water and hydrochloric acid, silica, carbonic acid, and others.

As the cooling went on, the precipitation of these binary compounds would give rise to numerous reactions, forming silicates, chlorides, sulphates, etc. With still further cooling, the condensation of water and the formation of minerals would ensue, and the consolidation of the outer shell would begin.

The same line of facts and reasonings give a clue to the probable constitution of the planets. Assuming the solar nebula to have once existed as a nebulous star at a temperature of complete dissociation, and to have contracted with loss of heat, throwing off the planets successively, we may infer that the outermost would be chiefly if not entirely metalloidal; the inner ones would be increasingly metallic as their orbits approached the central portion of the nebula.

Mr. Lockyer considers that the low density and the gigantic and highly absorbing atmospheres of the outer planets accord with their being more metalloidal than the earth: on the other hand the high density and comparatively small and feebly absorbing atmospheres of the inner planets point to a more intimate relation with the inner layers of the original nebulous mass, and consequently a more metallic constitution. For the same reason we should expect to find the metalloids scarcer in the sun than in the earth.

The news which we have briefly summarized awaits confirmation, though (as the newspapers say) it comes direct, and from a trustworthy source. It is certainly good enough to be true, commending itself, as Professor Prestwich observes in his review of the present aspects of geology, not only by the simplicity and grandeur of the views presented, but for their high suggestiveness for future inquiry and research.

GERMAN PATENT LAW.

At present the various States, comprising the German Empire, have each a separate patent law. At the time of the Vienna Exposition it was proposed to initiate a general patent law, and to abrogate the State laws. For this purpose the German Patent Protective Association was formed, and they have prepared the details of a new law, which has been presented to the Federal Council, with a petition for its enactment.

The proposed new law is substantially a codification of existing provisions, and embodies the current continental notions about patents and inventors. The latter are regarded