

Scientific American.

NEW YORK, MARCH 6, 1858.

Geology of Crystals.

An interesting paper on this subject was recently read before the Geological Society of London by H. C. Sorby, F.R.S., in which his experience in the microscopical examination of crystals was given. In some of these, dry cells are found; in others there are water cavities. Crystals having cavities with water, he concludes, were formed from aqueous solutions; crystals containing dry cavities were formed from matter in a state of igneous fusion; crystals containing both water and dry cavities were formed under great pressure, by the combined influence of highly heated water and melted rock. The amount of water in some of these cavities may be employed to deduce the temperature at which the crystals were formed; those containing few cavities were formed more slowly than those containing many.

Applying these general principles to the study of natural crystalline rocks, minerals, &c., it appears that the fluid cavities in rock salt, in some calcareous spar, in limestone, and in some gypsum, indicate that these minerals were formed by deposition from solution in water, at a moderate temperature, and the same conclusions apply to other minerals in veins in various rocks. The constituent minerals of mica-schist and the associated rocks contain many fluid cavities, which indicate that they were metamorphosed by the action of heated water, and not by mere dry heat and partial fusion, as the plutonist geologists have taught.

The structure of minerals in erupted lava proves that they were deposited from a mass in a state of igneous fusion, like the crystals in the slags of furnaces; but in some blocks projected from volcanoes there are water as well as dry cavities, which indicate that they were formed under pressure at a dull red heat, when both water and liquid rock were present. Quartz in veins has a structure proving that it has been rapidly deposited from a solution in water, and sometimes at a high heat, (about 329° Fah.,) and when the temperature was greater, mica, tinstone, and even felspar were deposited. Solid granite, far from contact with stratified rocks, sometimes contains fluid cavities; this is especially the case with coarse-grained quartzite granites, in which the water constitutes two per cent of the volume of the quartz, and the cavities are so numerous and minute as to number thousands in a cubic inch; the felspar and quartz in this granite contain dry cavities, thus showing that these minerals were formed with water under fusion at high temperatures. The conclusion arrived at from this is, that granite is not a simple igneous rock, formed as geologists have generally taught, when the earth was a mass of fire, and when no water could be found resting upon its surface.

Editorial Correspondence.

WASHINGTON, Feb. 25, 1858.

From present appearances, it is very likely that a large number of patent extension cases will be duly presented for the action of Congress, denominated "Bills of Relief." In the last week's issue of the SCIENTIFIC AMERICAN, there are specified eight cases, the aggregate value of which is estimated at upwards of \$30,000,000, which sum, though seemingly enormous, is not very far from correct.

Take the India-rubber interest as an example. The patents of Goodyear, Hayward and Chaffee, if extended and kept alive under the fostering protection of Congress for a term of seven or fourteen years as the case may be, will prove to be the most valuable monopolies ever enjoyed by individuals. The success of this entire branch of industry depends upon the joint operations of the processes patented respectively by each of the above parties. A consideration of the business of manufactur-

ing millions of pairs of india-rubber shoes, and the great quantity of waterproof clothing, life-preservers, &c., annually made, will enable any one to see the almost incalculable value of these patents. Goodyear has two patents for which extensions are sought to be obtained through the Commissioner of Patents, under the operation of the general laws, and which, if not extended, will expire during the month of April.

Hayward's patent for vulcanizing india-rubber has already expired. The Commissioner refused to extend it; but not willing to lose the exclusive benefit of this discovery, out of which so much money has been and still can be made, parties are pushing this scheme with a judicious regard to their best interests in this matter. Ex-Senator James, of Rhode Island, it appears, has a finger in this pie. He handed to Senator Foster, of Connecticut, a petition for its extension, which is now undergoing the investigation of the Senate Committee on Patents.

Chaffee's application is now in the hands of a similar committee in the House, who have decided, I believe, to report in favor of its extension. The applicant shows in his sworn statements that he has received about \$21,000, and expended about \$18,000. Taking the great value of the invention into consideration, and the paltry profit which the inventor has received, without inquiring into all the particulars which surround the case, it would appear to be a petition worthy the attention of Congress. Chaffee is undoubtedly backed in this application by very strong parties, who, if he succeeds, will reap a rich harvest; while Chaffee himself will doubtless only receive a small amount of the proceeds.

I am not disposed to do any injustice to applicants for extensions. There are cases which would seem to merit special relief from Congress; but this system of special legislation is contrary to the spirit of our institutions, and, unless carefully exercised, is liable to fall with crushing force upon many who are engaged in similar occupations. In all cases the merits of which have been established beyond reasonable controversy, and in consideration of the fact that it is questionable whether Congress can constitutionally take what is declared to be public property from the people, I would advocate that a moderate appropriation of money be paid to inventors in such cases out of the public funds. This is the doctrine the SCIENTIFIC AMERICAN has always held, and it seems to me to be reasonable and just.

Samuel Colt, the famous pistol patentee, has presented a petition for the extension of his patent through Mr. Bishop, a member of the House, from Connecticut, and it is now in the hands of the committee, awaiting their action. Colt, it is known, has become immensely wealthy. He has undoubtedly one of the finest manufactories in the world for this particular kind of business, and is thereby enabled to manufacture his style of revolving arm quite as cheap as, if not cheaper than, any other establishment can do it. He is also able to put forth extraordinary efforts to prosecute his application before Congress or any other tribunal, with great facility; while his opponents being less pecuniarily able, can make at best but a feeble show of resistance. There is, therefore, great danger that this pistol patent may be extended during the present session. The committees in both branches of Congress may not be able to get all the facts which are necessary to a full understanding of this case. They will judge only from the evidence presented to them; and hence it is very important that the committee should be furnished with everything calculated to throw light upon it. The committees are no doubt desirous of getting all possible information in respect to every case presented to their consideration. Inventors, in most instances, are pushed forward by parties interested, who tell piteous tales of personal suffering—how they have been cheated and cajoled, kicked and euffed, fed on stale bread, and have suffered sleepless nights. Such tales, whether true or

false, are all the members hear in many cases, and are well calculated to move their sympathies; and unless they can get behind the scenes and see all the actors, they are liable to be imposed upon themselves, and to recommend measures which have no real merit to back them.

McCormick's reaper case is apparently slumbering somewhere—probably in a "pigeon-hole" of the Senate committee-room; for I believe McCormick has no petition before the House committee. He is here, however, enjoying the sweets of his bridal honeymoon; and it is very much unlike him if he has not his eye on the revival of his expired patent in some shape. There is danger also in this case; and it behooves the opponents of the extension to bestir themselves. That it should not be extended is patent to the careful observation of all; for out of it would spring a litigation of an extent unparalleled in the history of patent jurisprudence.

Sickles has presented a petition to the House, with a view to the revival of his expired patent on a "drop cut-off," and about which there has already been a good deal of litigation. He now asks Congress to relieve him from the operation of that statute which deprives the Commissioner of the power to extend a patent after it has expired. Under the Commissionership of Judge Mason, a petition was filed for the renewal of this patent, and a day of final hearing was set down for the 5th of May, 1856. An immense mass of testimony was submitted, and the Examiner (Dr. Everett) went into an examination, for the purpose of ascertaining whether the invention was novel at the time when the patent was granted. On the 3d of May, two days before the appointed day for final hearing, Examiner Everett rendered his decision against the novelty of the invention, which decision Judge Mason, after some hesitation, concluded to accept, confessing that he had not time to examine the immense mass of testimony submitted in the case. Since that time, Judge Grier, in a suit (Sickles vs. Corliss) brought into the Circuit Court, decided that the invention was new, and that Mr. Sickles was the original inventor, but that the invention of Corliss was no infringement upon the other. Here is a conflict of authority, and in view of the technical point involved in it—that Examiner Everett decided the case two days before the time of final hearing—and the fortune apparently pending on the issue, Mr. Sickles appears here with his counsel, Ned Dickerson, who argued his client's case before the committee on Wednesday. Sickles and Dickerson are partners; they are, therefore, launched in the same boat, sink or swim, live or die. Mr. Blatchford, of New York, appears for the opponents, and promises to clear up all the haze which at present envelops the case. Sickles desires a special act of Congress to empower the Commissioner of Patents to re-examine the case upon its merits, and decide accordingly. A proceeding of this kind is very important, and should be well considered by Congress before it interposes its authority in such a case. McCormick desires this same privilege; and if it is permitted in one case, there will be no end to them hereafter. The precedent must prove dangerous to the interests of inventors and the community at large. If the Commissioner should ever happen not to be a man of discriminating ability and strict integrity, much wrong might be done. If Commissioner Holt should refuse the extension of the patent under such an act, unless some special provision was made to limit its operation, Sickles or his heirs might present his application to the attention of every subsequent Commissioner. This, however, is not the greatest danger to be apprehended as the consequence of such an act; it would open the door to many iniquitous schemes, and thereby inflict much injury.

Joseph Nock, of Philadelphia, Pa., has applied for the extension of an expired patent on a padlock, which is now generally used for securing mail-bags. W. A. Burt, of Mt. Vernon, Mich., has also applied for an extension

of a patent on an instrument for finding the true meridian. What chance of success attend these applications I cannot say. Both inventors are doubtless worthy men; but their inventions having become the property of the public, and so enjoyed for a considerable length of time, they would probably find it a difficult matter to sustain their claims in a court of justice, if granted.

Considerable rumpus has been kicked up here in regard to proposed changes in the Patent Laws. A movement in the shape of a patent bill, designed to "head off" the Commissioner of Patents, has been concocted by an ex-Examiner, and presented to Congressional consideration by a member from New York. It is a rotten fish, and I observe that it has been disemboweled in a most pointed and successful manner in the last number of the SCIENTIFIC AMERICAN. The views there presented have been generally endorsed here. I notice that the Washington correspondent of one of the New York papers says that this bill (which, by the way, is a codification of the existing system, and a mis-improvement on the whole) has been adopted by the committee, and will be reported to the House. This assertion I believe to be groundless; and it is a libel upon the intelligent gentlemen composing the committee, to even impute such an intention to them. They cannot and will not adopt this new code; of this I feel very certain. If any changes at all are made, they will consist in some such simple alterations as were recommended, in substance, by Judge Mason, which alterations were based upon the result of the known defects in the existing statutes. Mr. Taylor, of New York, will need to study the patent system very thoroughly, and avoid taking his cue from chronic-minded individuals who cannot grasp this subject, before he undertakes to introduce into it sweeping changes. His intention may be pure, but if so, he has been imposed upon.

Some removals have been made in the Patent Office, principally caused by deficiency in the revenue to meet the heavy expenses of the Office. The Commissioner does not seem to desire to close up any of the departments of the Patent Office. His policy is to encourage, but not to overstimulate genius. He wishes every application to be candidly and fairly judged upon its merits, and, if there is any novelty, to grant a patent for it. There has been a good deal of opposition to this spirit, within the limits of the Patent Office, and it has even showed itself in the shape of carping criticisms in some journals. Loose and erroneous statements, designed to asperse the character and actions of the Commissioner and those Examiners who sympathize with the Commissioner's views, have been put forth in various quarters; but they are evidently the work of malice, and cannot be sustained by any decent and respectable mode of reasoning. Some journals that would seek to make political capital out of the filth of a sewer, are ever ready to publish reports, whether true or false, providing they only tend to serve the foul purposes they have in view. A very greatly increased harmony of opinion and unity of action is apparent among the Examiners; the business of the Office is increasing; and the policy of the Commissioner, as it is becoming better understood, is becoming more generally considered to be the true interpretation of the spirit and meaning of the law. This is as it should be.

Butler's Record Ink.

We have received a specimen of this ink from the manufacturer, J. J. Butler, of Cincinnati, Ohio. It flows easily from the pen, and has a permanent black color, which, it is said, is obtained without logwood or bi-chromate of potash. It appears to us to be a very good ink.

It has been estimated by the timber getters of the South that a large pine, sufficient for the spars of a first-class ship, requires from two to three hundred years to grow.