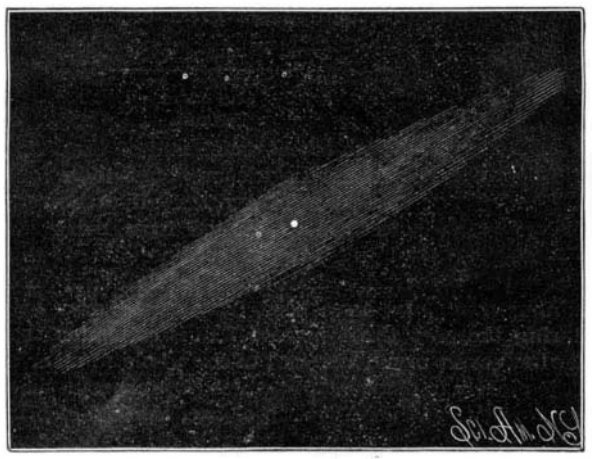
THE WONDERFUL NEW STAR IN ANDROMEDA.

On Wednesday, September 2, a cablegram was received at this observatory, *via* Harvard College Observatory, announcing the discovery by Hartwig, of Strassburg, of a star-like nucleus in the great nebula of Andromeda. The same evening being beautifully clear, I turned the large telescope upon the object, and was astonished at the marvelous spectacle. I am as familiar with the great nebula of Andromeda as the page of an oft-read book, having examined it hundreds of times in making my cometary sweeps. All that was ever seen before at the center of the nebula was a broad, diffused condensation; but here was a bright star-like disk, hard and well defined with all powers of the telescope, high or low. A *new sun* had suddenly appeared, apparently in the middle of this well-known nebulous mass. In later observations it had attained to the sixth magnitude in brilliancy, and was perceptible to the naked eye. A small telescope will show it well. In large instruments, with a low power and wide-field eye-piece, sufficient to take in the whole nebula, which is two degrees in length, the sight is a fine one, especially to those who are familiar with the former aspect of the nebula. I append a drawing of the nebula with the new star therein. The form of



NEW STAR IN ANDROMEDA NEBULA.

the nebula is a very elongated ellipse. On a clear night it is visible to the naked eye as a misty patch of light, and has been often mistaken for a small comet. The following directions will enable any one to find it:

First find the constellation Cassiopea, which in the early evening is well up in the northeastern sky. It resembles a chair now lying on its back. A line drawn southward through stars forming the front corner of the seat and the bottom of the back leg of the chair will nearly intersect the nebula, which is situated at a point on this line about three times the distance from the lower star as the space separating the two stars mentioned.

Every intelligent person should obtain a view of this celestial wonder, one of the most remarkable in astronomical annals.

Is it a temporary or variable star between us and the nebula? Or is it the condensation of the nebulous mass into a central sun, and hence a marvelous confirmation of the nebular hypothesis?

WILLIAM R. BROOKS.

Red House Observatory, Phelps, N. Y., Sept. 5, 1885.

The Commercial Production of Hydrogen.

The old problem of the cheap production of hydrogen by decomposition of steam is being attempted afresh by MM. Hembert and Henry. The process employed by these chemists consists essentially in passing steam, superheated to the point of dissociation, over incandescent coke. There is thus immediately produced a gaseous mixture formed of equal volumes of hydrogen and carbonic oxide. This mixture passes into a second retort heated to a full red, into which is admitted a fresh quantity of steam at the same temperature as the former. This steam acts upon the carbonic oxide, and causes it to pass into the higher state of oxidation, that is, into carbonic acid. The volume of hydrogen produced by this second reaction goes to join that already formed: so that, when the operation is perfectly managed, 3,200 cubic meters of hydrogen can be obtained from a ton of coke. The hydrogen is afterward purified with lime, to get rid of the carbonic acid; and there remains with it only a small proportion of carbonic oxide.

MM. Hembert and Henry are now organizing a factory for the production of hydrogen by their method; and they hope to find a use for the gas in heating and lighting. In what way, says the *Journal of Gas Lighting*, this hope is to be realized we are not informed. At present it would appear that nothing could be much more useless, in a commercial sense, than hydrogen prepared in this way, and at the cost which must necessarily be incurred. The only novelty in the proposal lies in the suggestion to divide the process into two stages; but the practical utility of this idea remains to be proved.

Correspondence.

The Solar Nucleus.

To the Editor of the Scientific American:

In regard to the experiment mentioned in the SCIENTIFIC AMERICAN for August 8, 1885, of heat becoming invisible on account of intensity, may this not show that the nucleus of the sun, which is disclosed during sun spots, is dark simply on account of the excess of heat? According to the experiment, the heat required to darken is very moderate indeed, not the one one-hundredth part of the estimated temperature of the sun; and if equal brilliancy of light implies equal intensity of heat, the solar excess might be accounted for in some such way as this.

EDWARD J. PATEK.

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Poisonous Lard Oil.

To the Editor of the Scientific American:

A recent experiment with what is termed low grade lard oil, or bolt oil, has convinced me that machinists and others cannot be too careful to keep it from any slight abrasion of the skin, as the following will prove. Having to fit some new dies to my bolt cutter, and testing their operation, my hands became covered with this so-called *lard oil*. A slight and almost unnoticed abrasion of the skin below the nail of my left thumb allowed it to come in contact with the flesh beneath; in about an hour it became, first red and painful, then tumid, and finally black, showing unmistakable signs of blood poisoning, which resisted all remedies until cauterized with caustic potash.

Upon this becoming partially healed, I returned to my experiments, having taken the precaution to well protect the injured part by wrappings; but some of the oil found entrance under the edge, and remained in contact with the skin all day, the consequence of which was that the animal poison was again absorbed by the *sound* but tender skin, and became diffused all over the thumb and as far as the wrist. It could only be checked by further cauterization and poulticing, bathing the wrist and arm with iodine and aconite, and at every renewal of poultices bathing the broken skin with a tepid weak solution of carbolic acid, viz., 3 drops saturated solution (20 per cent water to crystals) to 1 pint of soft water. The skin has separated from nail to wrist, and after intense suffering for two weeks is slowly healing under a covering of old linen dipped in "cosmoline." Query: Was this oil made from the fat of diseased animals, that is, "boneyard oil"? OPERA MUNDI.

Syracuse, Aug. 21, 1885.

American Inventions Wanted in Egypt.

To the Editor of the Scientific American:

I have been requested by some of the principal land owners to call the attention of American makers of agricultural machinery to the fact that there does not exist a satisfactory thrasher in Egypt. Some few have been imported from England and other countries, but the results have been unsatisfactory, and the machines laid aside.

To bring this properly before the manufacturers of such goods, I can think of no better method than asking a place for this letter in the columns of the SCIENTIFIC AMERICAN.

The amount of land sown in wheat is probably about 1,000,000 acres, producing about 15,000,000 bushels. Low prices have recently caused a greater breadth to be devoted to beans.

The Egyptian grain is rather small and tough, particularly that of lower Egypt. The complaint is made that the thrashing machines brought out here are useless, as they crush the grain. The manipulation of the straw is also a very important point.

The actual process of getting out the grain is perfectly described in the sculptured and printed scenes in the tombs and temples handed down from the days of the Pharaohs, thousands of years ago, or from the scene given in the illustrated Bible.

In the former case, we have a herd of animals driven around and around the mass, treading out the grain and pulverizing the straw. In the second, a small car with a number of sheet iron wheels is driven around the mass until it is completely triturated. Then follows the winnowing in good old scriptural and Pharaonic fashion.

This process is naturally a matter of time, in fact about two months are required to get out the crop.

As the Government has now arranged that the collection of taxes shall be by installments as the different crops are ready for market, time, a long neglected quantity, becomes valuable, and at last there is pressing need for some cheaper and more expeditious method of getting out the grain.

Although there some very large landed estates in Egypt, except in the case of the Daira and Domains (the estate formed by Ismail Pasha, ex-Khedive), there are but few large tracts, containing upward of 1,000 acres, the property of any one individual.

The village system tends very much to the infinitesimal division of land. We may safely assume the average area of a village at 1,000 acres, and that one-third of this would be planted in wheat, producing about 4,500 bushels.

At harvest all the wheat from the 300 acres would be brought up to the thrashing floor and stacked in as many piles as there are owners, with the exception of that belonging to the wealthy proprietors, who have generally small villages near the main one.

Each proprietor now sets to work to get out his grain, either by treading it out or by using the car or horag.

Of course nothing can be done with the grain until the whole mass of straw has been winnowed out.

As for the straw, it has been cut and pounded into chaff, the ends of the broken bits being rounded and softened.

The next village would be situated at a distance of one or two miles; this brings us to the point that one of the essential conditions of success for a thrasher in Egypt is that it must be transportable, and, allow me to add, over very bad roads.

There is also the straw to be considered: whether it be that the Egyptian straw is very hard, or else highly glazed, or that the cattle are not properly educated, it is said that animals will not eat it unless it has been subjected to the process of trituration, as shown in the treading.

Therefore some means must be found of preparing the straw.

It is generally understood here that it is sufficient to explain a need to an American manufacturer to have him set to work and produce the required machine, provided he sees a proper profit; it is also said that the American manufacturers have furnished machines suitable to the varying requirements of their own people and neighbors, and that they perfected a machine for use in Russia.

Believing this, my friends feel sure that should some of the American establishments turn their attention seriously to the study of the wants of Egypt, a proper machine would quickly appear, and that its successful adoption would be most handsomely repaid.

It must be borne in mind that for agricultural machinery Egypt is almost a virgin soil, and that it will pay any house a very handsome profit to properly study her needs. The harvest in Egypt lasts during the months of April, May, June, and July. At the same time, attention might be turned to plows or cultivators for cotton and cane.

A properly protected patent in the United States and Europe would be respected here, as manufacture of such implements in Egypt is almost impossible, owing to the high price of skilled labor and the necessity of importing all the materials.

I shall be most happy to assist any one coming to Egypt with a view of studying this question, and promise to present him to some of the principal land holders and agriculturists, who will see that every facility is given for study and examination.

I only ask that such person be a responsible agent of some well-known firm. I have the honor to be your obedient servant, A. MACOMB MASON,

Inspector-General Cadastre.

Cairo, Egypt, Aug. 14, 1885.

Nets versus Torpedoes.

For some years past the attention of naval officers in England has been directed to perfecting nets, for defending their ships against the attacks of offensive torpedoes. The series of maneuvers executed by the evolutionary squadron in Blacksod Bay, Ireland, proves that the nets employed in the British navy afford a perfect protection against any torpedoes in use, without seriously retarding the speed of the ships, as is so well shown in the sketch and article on this subject by Mr. F. Villars in the *Graphic* of the 18th of July. But no sooner has this system of defense been perfected, at a cost of £75,000, than they are called upon to find other means for defending their ships, as the "Berdan" system of torpedoes renders these nets perfectly useless. This is done by employing two torpedoes in place of one; the first of these being accurately steered against the net serves as a fulcrum for the second, which (although possessing its own motive power, is partly towed by the first), by means of a horizontal rudder which drops when the towing cord is slackened, dives under the net, and is then by the same cord directed upward until it explodes under the bottom of the ship. Therefore, in the opinion of experts, the net is an advantage to this system, rather than a disadvantage, as it furnishes the means for striking the ship at a more vulnerable point than when the torpedo strikes her side, which it must do if nets are not employed.

This system, as shown to the English government, has also another mode of attack, which consists in exploding the first torpedo against the net to form a breach for the second one to pass through and strike the side of a ship, but it is believed that the first system is preferable, owing to the advantages stated.—*Constantinople Express.*