Correspondence.

The Planet Neith.

To the Editor of the Scientific American:

The interesting article in your last number on the supposed planet of Neith brought to my mind a hypothesis entertained upon the discovery of the satellites of Mars, that they were not its own original production, according to the nebular theory, but were some of the planetoids which had come within the range of its attraction.

Jupiter has sifted out belts of space in the region of the planetoids which are now comparatively empty; may not Mars have done a little, a very little, on the other side of the group? J. R.

Ottawa, Sept. 9, 1884.

The Planet Neith.

To the Editor of the Scientific American:

Your issue of Sept. 6, 1884, contains an interesting article on the "Problematic Planet Neith," in which it is said that that is the name given the little planet in honor of the mysterious goddess Sais, whose veil no mortal has raised.

This is as confusing as it could well be made, for, first, the article is to prove that the veil has been raised, and the name is therefore singularly inappropriate. Second, Sais was not a goddess, but a town in Egypt, in which Neith was worshiped. Neith was a goddess of great local veneration, who represented universal motherhood.

Her name would therefore be more appropriate for the son, which, no doubt (in my mind, I mean), was really worshiped under this designation.

It is the general opinion that it was long ago agreed upon by astronomers that new planets should have Latin mythological designations, so the name of Herschel was refused to the world he discovered, and it was hardly suggested that Leverrier should attach his patronymic to the planet he gave to science.

If it be true that the new planet was formerly a satellite of Venus, and is now beyond her attraction, the name Adonis, typical of the loved and lost, would be far more appropriate than the one suggested. J. C. B.

Balancing of Wheels and Cylinders.

To the Editor of the Scientific American:

An article entitled "Balancing Wheels and Cylinders," in your issue of Aug. 30, excites many thoughts which may be carried further. No. 368 of SCIENTIFIC AMERICAN SUPPLEMENT published the most exhaustive article on the subject of balancing which has yet appeared. The balancing of highly speeded machinery is imperative. Your suggestion that an object, a pulley, for instance, should be poised so as to be free to oscillate in all directions about its center, is the key to the correct method for balancing all rotating objects the center of which is accessible by a pivot or other equivalent means of support. It can then be, first, reduced to a standing balance by applying weights in deficient parts, and afterward, by rotating, be made to indicate where, in lines transversely to the plane of rotation, the weights should be placed to secure a running balance.

That the process involves no uncertainty we may feel sure, from the fact that Pratt & Whitney have recently established in their works in Hartford, Conn., a complete set of apparatus for securing a running balance to all rotating or revolving parts of machinery. They are able to suspend a cylinder, the center of which is inaccessible by a pivot, between two centers, with the axis perpendicular, and obtain indications showing points of excess or deficiency of weight. It is obvious that the center of gravity of a rotating body and its mechanical center must coincide. A running balance will in every case, therefore, be a standing balance; and a balance at one rate of speed is a balance at all rates of speed. The inside of the rim of a wheel may be improved by turning; but cannot often be brought to a balance by that means, as the lack of homogeneity will defeat.

All rotating bodies will strive to rotate in planes parallel to their greatest sectional weight. A pulley or cylinder, whose axial dimension is greater than its equatorial dimension, cannot be long retained upon its mechanical axis when poised near its center of gravity; but upon slight disturbance will fall out of the plane in which it is desired it shall run. It can in no case, unaided, recover rotation in such plane. It is, therefore, necessary, when balancing a cylinder, whose length exceeds its diameter, to poise it so that it be restrained from assuming a plane of rotation parallel to its greatest sectional weight. Yet the restraint should not be so great as to prevent each end of the cylinder from rotating upon its center of gravity. The mode of suspension mentioned above as adopted by Pratt & Whitney is believed to be the best.

An unbalanced pulley running at a high velocity in the middle of a slender shaft, will deflect the shaft no more than enough to permit the mass, consisting of shaft and pulley, to rotate upon its center of gravity. But within that limitation, however small, its energy is irresistible. The point of greatest prominence of the pulley will coincide with the point of greatest deficiency of weight. It is very frequently but erroneously supposed that the opposite effect is realized, and that the heavy portion of the pulley will "throw off" by centrifugal force, like the ball of an engine governor, to an extent limited only by the restraint or rigidity of the shaft. W. M. D.

A New Invention Called For.

There is an opportunity now presented to inventors with some knowledge of the facts such as rarely is open to any man.

Wanted, a cotton gin: one which does not abuse the cotton like the saw gin, one that is more positive in its feeding arrangements and with greater facility of doing work properly than the roller gin. The gin wanted is for the grade of cotton known as peeler, or medium between the upland and Sea Island.

There is an increasing demand to-day for a better grade of cotton than is raised in Georgia, South Carolina, with more certainty to the staple than with the Florida cotton, with the fineness that the best Louisiana, Mississippi, and Alabama cotton is noted for, but with an increased length of staple running from 1¼ to 1¾ inches.

The saw gin tears this cotton to pieces. The roller gin is so slow that it does not pay the planters to raise this extra staple cotton, for the simple reason that it takes them, to use their own expression, "from November to July" to gin it.

The saw gin must sooner or later be abandoned for all cotton, and yet to-day it is the best gin in use for upland and common cotton. Inventors who would make a success of this must study the cotton question, and in several things must absolutely abandon previous practice. The saw first of all doubles the staple or fiber into several sharp turns. This is done suddenly with a great deal of force, and if the cotton is not perfectly dry, the outside of the fiber is torn and its strength is forever gone. The roller gins of to-day are covered with leather, rubber, paper, cotton cloth, and a half dozen other mixtures. They drop the cotton off from the seed, and there are quite a number of systems of machinery which are not particularly speedy in quantity. In some of these a straight edged knife, like the doffer on the cotton card, strikes across another knife of the same kind without injuring the fiber of cotton, but in this way, while the fiber is bent over the top of the knife, held against it by the pressure of the rubber or cloth covered roll, it breaks the seed away from the fibers, the cotton is carried through and thrown into the pile. This is practically the way cotton is ginned to-day.

There must be some Yankee who can see his way out to perfect a gin which is free from the faults of the saw gin in handling the cotton, and has vastly more virtues than any roller gin ever yet put on the market. What is wanted is something which will take the fibers of cotton from the seed, leave the fibers as nearly parallel as possible and without injuring them. The man who perfects this machinery will have a far more legitimate and quite as valuable a matter in his hands as the telephone or any of the other inventions of the past few years.

If a man can be found who can raise this kind of a gin without going into some kind of a stock speculation, or without putting it upon the market until after it is thoroughly tested, that man will not need to do much work the rest of his natural life unless he attempts to ape some of the bonanza kings or other fungous growth of society. There are a great many questions included in this of the cotton gin. The doors are wide open. There are no patents on the records that amount to a straw man, and whoever can see some way to do this properly, thoroughly, and efficiently, will find a rich harvest.

The ginning of cotton to-day, so far as the saw gin goes, is barbarous, so far as the roller gin goes is not worth considering in the amount of work the roller gin will do, yet the demand is for better cotton. The planters are ready to furnish it. We should suppose the spinners might take a little interest in some of these things, but they are too busy buying cheap cotton. The woods are full of inventors and patents which are principally worth the value of the paper on which they are written, per pound, at least so far as the spinner goes, for really accomplishing the object aimed. Who is the man that tackles the job?—*Manufacturer's Gazette.*

The New Australian Silver Mines.

Australia has long been noted as a gold producing country, and now what bids fair to be an extensive silver producing region has been found. The mines are in the Barner ranges of New South Wales, near where the colony joins South Australia. Silver bearing ores were first found there in 1872, by a shepherd, but the nature of the ore was not understood, and nothing was done. Two years ago a lot of ore was sent to England, this time with better results, though through inexperience the miners selected the lowest grade ores, viz., argentiferous galena. They netted the handsome return of £7 per ton on the shipment, after the highest commissions and charges had been exacted. Miners who were working silver properties in these parts were all making money before they sold out.

Now there has been an influx of miners, and a town known as Silverton has been built up. The country is represented as inhospitable, rocky, and mountainous. Over the whole of the great mountain chain are found localities of the precious metals, and, following their leading structural idea, they arrange themselves in parallel zones of a similar nature to those of the Cordilleras and California. Where the section of the formation can be examined, there can be seen folds of more or less complexity, twisted and warped by longitudinal forces and often compressed into a series of zigzags of a wonderful nature. The mines of this district consist of two groups. The one at Silverton embraces eleven claims, in which the ore consists of sulphides of lead or argentiferous galena. The profits secured on these ores amount to £12 per ton. About eight of these mines are opened up, six of them to a considerable extent. There is one shaft down 130 feet, carrying the lode very strong in the bottom. The lode at this point gives indications of turning from sulphides of lead into sulphides of silver. Fifteen shafts have been sunk on different parts of these eleven mines, their depth varying from 30 feet to 75 feet, one being 130 feet. The lode is disclosed in each of these shafts, and found to be of a thickness varying from 1 foot to 3 feet. Some rich returns are now being obtained from these mines, the ore yielding, as above stated, a clear profit of £12 per ton. The second and larger group of mines is situated at a distance of 28 miles from Silverton. They are called the Lakes Camp group. The ores here are purely sulphides of silver, and very rich. Two tons of ore recently sent to England for assay were sold for £600. Shafts have been sunk in many parts of the ground held by the syndicate, and ore has been discovered everywhere, but, of course, all of it is not of the richest quality.

The lodes have all the appearance of permanency. In one shaft, the deepest of this group, the lode has been traced to the total depth—75 feet—and at the bottom it is six inches thick, with indications of continuance and improvement. A great drawback to the rapid development of these mines is the scarcity of labor at Silverton.

Covered and Uncovered Boilers.

In order to ascertain the degree of advantage obtainable by felting and lagging steam boilers, Mr. B. H. Thwaite, F.C.S., has carefully carried out the following experiments on a Bull type of vertical boiler: A definite quantity of water was poured into a vessel of a size sufficient to cover one square foot of plate surface, the vessel being externally lined with wood. The rise in degrees of heat during the hour's exposure was noted. The same weight of water, with identical initial temperature, was then placed for the same time on the surface of the lagging, which consisted of three thicknesses of three-eighths inch felt, covered with one-half inch tongued and grooved battens. On the naked plate it was found that 516·75 heat units per square foot were absorbed by the water; and on the lagged portion only 145·75 units per square foot were given off. This is equivalent to a reduction of wasteful radiation, due to the lagging, of 34 per cent; or with a vertical boiler, say 4 feet in diameter and 9 feet in height, working for ten hours, there would be saving, due to the lagging, of at least 70 pounds of coal.

Railway Law.

Railway companies are often called upon, says the *St. Louis Railway Register*, to defend suits in which passengers, who have, either by their own carelessness or misfortune, suffered losses of property, attempt to recover compensation therefor. It is interesting to read reports of these cases, and to know how far common carriers of passengers can be held for such losses. Without attempting any subtle analysis of the cases, or argument as to their correctness, we will briefly refer to some of them, and try to deduce the principles involved.

At New Orleans, recently, Mrs. Henderson sued the Louisville and Nashville Railroad Company to recover ten thousand dollars for the loss of a little handbag which contained money and jewelry worth that sum. It seems that she was going from Mobile to New Orleans, and, as the wind came in too strong through the open window, she arose to close it, having her bag in her hand. In some unexplained way she lost her treasures through the window, and the conductor refused to stop the train until it arrived at the next station. Then she sent a man back for the bag, but it was too late, it had been picked up and kept by some one. The Federal court decided that although, possibly, there was a moral obligation resting upon the conductor to stop the train when apprised of the loss, he was not legally bound to do so, and the company was not liable for the property lost.

Some years ago one McElvoy took a train on the Marietta and Cincinnati Railroad with 4,000 dollars in his pocket belonging to a bank for which he was agent. The train went through a shaky bridge, caught fire, and poor McElvoy and the money were both burned up. His widow sued for damages for his death, and the bank sued for the money. How the first suit resulted we do not know, but the bank was beaten in its attempt to make itself good. The court said that McElroy ought to have sent the money by express if he wished for absolute security; and that when he carried the funds in his pocket he assumed the risks himself.

In New Hampshire, once, Mrs. Smith, a poor woman who sewed for her living, took a train with a big bundle of coats, cut ready for making, and placed it on the seat with her. During a few minutes' absence her property was stolen, and she sued for its value. The judge decided that the company was not liable, for there was no agreement to carry the bundle either as goods or freight.

A certain Mr. Weeks was still more unfortunate. He was going to New York on the New York and New Haven road, and when the train arrived, horses were attached to the car to pull it down to the station. Weeks went to the door to watch the work, when three men attacked and robbed him of 16,000 dollars in cash. He sued the company, also, and the highest court in Connecticut decided that the corporation could not be made to assume the loss.