The eclipse being visible in Europe, and from places so readily accessible from England, no government expedition will be sent out to observe it. It is not probable, therefore, that any English astronomers will go so far east as Siberia. It may be hoped that Russian astronomers will make good this defect, especially as four of the principal towns of Siberia lie on the shadow track—Tobolsk, Tomsk, Krasnoiarsk, and Irkutsk; the first and third being close to the central line, and the sun being eclipsed when nearly on the meridian at Irkutsk. A series of Siberian stations is the more to be desired, since, as Prof. D. P. Todd has pointed out in the *American Journal* for March, this eclipse offers an exceptionally favorable opportunity for a concerted scheme of observation. The path of totality coincides in a most remarkable manner with the lines of the Russian overland telegraph, so that it will be perfectly possible to select a series of stations in telegraphic communication with each other, and extending over a line of 100° of longitude, with an extreme difference in the absolute time of totality of more than an hour and a half. It appears, Prof. Todd learns from a letter from Dr. S. Von Glasenapp, that the Russian telegraph service may be expected to give the use of its lines at the time for astronomical purposes. It is certainly to be hoped that so unique an opportunity may not be lost, for it might well happen that some discovery, either in solar research or of a comet or intra-Mercurial planet, might receive in this manner the most satisfactory confirmation and development.

The eclipse may also be well observed in Japan. On the west coast, Niigata, one of the treaty ports, lies well within the shadow on the north, and Takata, a large manufacturing town, on the south, the central line passing through the large fishing village of Idzumosaki, on the high road between the two. The island of Sado, opposite to Niigata, which is free to foreigners, is wholly within the shadow, the central line crossing Sawa Umi Bay. The totality here lasts 198 seconds, with a sun 37° high. On the east coast the important town of Mito lies almost precisely on the central line. The duration here will be 192 seconds, and the sun 35° high. Japan, indeed, offers advantages for observing stations superior to those of Perm, as the sun will be considerably higher, and the duration 20 to 25 seconds longer.—*Nature.*

Many Items of Interest.

How many pressmen are there, asks the *American Art Printer*, who pause to consider how, in numerous ways, they can save trouble to themselves and time to their employers by a little system and forethought. The preserving of make-ready sheets of all jobs likely to be done again, whether in type or plate form, is one of these. There are few offices where regrets for neglect of such a precaution have not been expressed. It is a safe rule to keep the make-ready of every type job until the job has been distributed, and even then the pressman should carefully cut out and preserve the make-ready of all cuts or other difficult or tedious work that may be included in such job, before throwing away the rest. As to electro or stereo plate forms, he should invariably keep and file them, for they are useful. Even should the margins be changed, he can easily cut the pages apart and adjust to the new margins by pasting his old make-ready over the pages in their position on his cylinder or platen.

The Boston *Journal of Commerce* warns its readers not to make the too common mistake of thinking a cheap engineer is the man you want. The engine and boiler which furnish the power are important factors in the success of any business, and no matter how simple or strong they may be, it will pay to put them in charge of a man fully competent to care for them, and particularly so if far from facilities for quick and proper repairs. For a small plant it is not necessary to have the highest grade of ability—for there are grades among engineers—but it is better to pay a suitable man for competent and faithful service than to pay for what may happen through the incompetence or neglect of one whose only recommendation is that he is "cheap."

A good disinfectant is made by dissolving half a drachm of nitrate of lead in a pint of boiling water, then dissolve two drachms of common salt in eight or ten quarts of water. When both are thoroughly dissolved, pour the two mixtures together, and when the sediment has settled you have a pail of clear fluid, which is the saturated solution of the chloride of lead. A cloth saturated with the liquid and hung up in a room will at once sweeten a fetid atmosphere. Poured down a sink, water closet, or drain, or on any decaying or offensive object, it will produce the same result. The nitrate of lead is very cheap, and a pound of it would make several barrels of the disinfectant.

A good cleaning powder for show windows and mirrors is prepared by moistening calcined magnesia with pure benzine, so that a mass is formed sufficiently moist to let a drop form when pressed. The mixture has to be preserved in glass bottles with ground stoppers, in order to retain the easily volatile benzine. A little of the mixture is placed on a wad of cotton and applied to the glass plate. Do not use near a fire or light, as the benzine vapor is very inflammable and explosive.

Mr. Emil Kaselowsky, of Berlin, proposes to guide a torpedo, in its exit from the tube, by mounting in the forward end of the tube a box or sheath, having a rod with a T shaped groove in its under side, running the entire length of the rod. The torpedo is provided with a stud corresponding to the groove, and as the torpedo leaves its tube the stud slides into the groove—the rod having been run out by means of a crank or other contrivance—and the torpedo is thus supported and directed until it is well out from the vessel or other place of discharge.

The same inventor has a device for releasing the brake of a torpedo, consisting of a small cylinder on the rear end of the tube, and connected with the tube by means of an orifice, to admit a part of the propelling gas into the cylinder. The gas so admitted at the time of discharge actuates a piston, the rod of which extends to the forward end of the tube, and is there attached to a lever connected with the block or brake. The lever being thrown back by the action of the rod, the brake is released and the torpedo expelled. A spiral spring within the cylinder brings the brake back into position.

The *Public Service Review* says a third invention by Mr. Kaselowsky is designed to avoid the firing, and consequent premature explosion, of a torpedo before its release from the tube. He provides a stop to prevent the firing mechanism from operating, and at the proper time the turn of a hand lever removes the stop, and by the same motion the cap over the mouth of the tube is swung aside so as to release the torpedo, and the firing mechanism is actuated.

At this season of the year the annoyance caused to animals by flies and mosquitoes often amounts to positive agony, and at all times, in what is called good corn weather, it is sufficient to prevent the stock eating enough to keep them in good condition. The animals will stand in the water or pass the greater part of the day in the shade rather than expose themselves to the sunshine, going out to eat only when driven by hunger. They quickly lose flesh, the flow of milk shrinks, and a loss is incurred that cannot be easily made good again. At all times a good feed of grain is beneficial to stock, but it is especially so when flies are very annoying, since it will do much to prevent shrinkage of flesh and milk. Horses and milch cows may be protected, in a great measure, by wiping them all over with a sponge dipped in soap suds in which a little carbolic acid has been mixed.

Screws that are too small for separate treatment may be cleaned from rust as follows: Take a pound of screws and place them in a small box, a cigar box will do; put a small quantity of oil on them and shake for a minute; then put a piece of cotton waste in the box, and repeat for a minute; finally put a handful of sawdust in the box, and shake for another minute or so, and remove the sawdust by sifting it from the screws in a fine sieve. The screws will come out well cleaned.

The cleanest and most perfectly polished floors have no water used on them. They are simply rubbed off every morning with a large flannelcloth, which is soaked in kerosene oil once in two or three weeks. Take the cloth, and with a rubbing brush or stubby broom go rapidly up and down the planks (not across them). After a few rubbings the floor will assume a polished appearance that is not easily defaced.

S. Smirke, R.A., in the *Architect* (London), says the application of volcanic scoria or pumice to the construction of the vaulting of the corridors of the amphitheater at Catania is worthy of observation, and bears witness to the constructive ability of the Roman builders. The springings and various main ribs are executed in very sound brickwork, while the interstices, spandrels, and other parts of the vaulting, are wholly executed with this light yet hard material, in its roughstate, but run in solidly with Pozzolana cement. That this mode of construction is substantial is evident from the permanence of the work in these ancient corridors. The dome of the Pantheon at Rome is executed in the same manner, and has stood the sieges, earthquakes, and all other causes of damage and decay, for nearly two thousand years. Perhaps I may here be permitted to say that I think it worthy of inquiry whether a safe, permanent, perhaps even economical, vaulting might not be similarly executed with coke, a material which has many of the properties of a volcanic scoria, is extremely light, and yet so hard as to be able, like the diamond, to scratch glass.

BLACKBERRY vines should be well cultivated after the fruit has been picked. The old canes should not be cut out until late in the fall, but the new canes, which are to produce next year's crops, will be greatly benefited by cultivation.—*Farm, Field and Stockman.*

Correspondence.

"Myriads of Cotton Worms."

To the Editor of the Scientific American:

The above heading in your last issue should have been "Myriads of Caterpillars." The cotton worm comes later in summer or early fall, and eats cotton leaves in preference to anything else.

These caterpillars are comparatively new to us. They hatch out with the budding of the leaves—like the apple tree caterpillar, which they resemble, only they do not surround themselves with a silk webbing in bunches like they do. They seem to prefer black and other kinds of gum leaves, and oak leaves.

The flat swamps of Lynches River are about one mile wide, and are largely wooded with gum trees, and last year these pests ate every gum leaf and pop ash leaf from its junction at Pee Dee for twenty or thirty miles up Lynches River and adjoining swamps and branches, and the water looked like ink in many places.

They do not attack field crops. I send you a cocoon containing one in a chrysalis state. E.

Johnsonville, S. C., June 5, 1887.

Colored Glass.

Until quite recently, but little colored glass, with the exception of common black and amber bottles, was made in this country. Now quite a number of glass works are engaged in its manufacture exclusively, and at others it forms a large part of the product. Some of the most beautiful colored glass produced in the world, rivaling in depth and richness of coloring, as well as in beauty of design, that from the famous works of Europe, is made at the flint glass works of the United States.

The coloring materials most largely employed are iron, manganese, copper, cobalt, and gold. These are generally used as oxides, though in some cases, but very rarely, other compounds are used. In addition to the above, arsenic, uranium, chromium, and silver are occasionally employed.

As was pointed out by Bontemps, many years ago, the coloring properties of the metallic oxides are greatly modified by the degree of heat to which the glass is subjected, and by other circumstances. Not only will different temperatures give different shades of the same color, but even different colors. Manganese, for example, which is the great decolorizer of glass, so universally used for the purpose as to be known as "glass maker's soap," is used as a colorer chiefly to impart a pink or purple to glass. If, however, the glass so colored remains too long in the furnace, it becomes pale or reddish brown, then yellow, and finally green.

From the oxides of iron, all the colors of the spectrum may be produced, and in the order in which they appear in the spectrum. Its primary effect upon glass is to give it a green tinge. Hence in the manufacture of white glass, sand containing much iron is carefully avoided; what little it does contain—and there is always more or less present—is neutralized by the oxide of manganese. Oxide of iron, however, produces other colors than green. Indeed, the green of this oxide has but little brilliancy, and when rich emeralds are desired other materials are used, such as oxide of copper. Iron will produce in enamels, which are only glasses, a fine purplish red, or, under a stronger heat, an orange. If a piece of iron is thrown into the pot of a flint glass house during the blowing, the glass in its neighborhood will be orange or yellow. In window glass houses, the addition of a small proportion of oxide of iron gives a bluish tint to the glass, while it is well known that the glass left in the pots of the bottle houses becomes an opaque blue.

Oxide of copper is chiefly used to produce reds, rubies, and purples in the cheaper kinds of glass. To produce these reds with copper, however, requires skillful manipulation, as they are not all fixed.

The temperature must be kept at the lowest possible point, otherwise the glass changes to a purple, then to a sky blue with a tendency to green. A heat between the maximum, which gives a blue, and the minimum, which gives a red, produces a purple.

The finest rubies, reds, purples, violets, etc., are produced by gold. The purple of Cassius (which is a mixture of the oxides of gold and tin) or some similar preparation of gold is used. The coloring power of gold is so great that one part of gold will give a full, rich body of color to from 600 to 1,000 parts of glass. The glass colored with gold can be made to assume a scarlet, carmine, rose, and ruby.

Cobalt gives a blue which is unalterable in any fire. It is also used for some of the finer blacks.

Carbon, usually as powdered cannel coal, is the coloring matter chiefly used in the manufacture of black and amber bottles. Plumbago was at one time largely used, and still is to some extent.—*Mineral Resources of United States.*

OIL stains may be removed from paper by applying pipe clay powdered and mixed with water to the thickness of cream; leave on for four hours.