

A New Mountain Observatory.

German papers inform us of the erection of an observatory on the Sonnblick, one of the summits of the massif of the Tyrolean Alps, the highest elevations of which are the Grossglockner, the Wiesbachhorn, and the Hohe Narr. Extensive glaciers and eternal snow, from which those giants rise, cover those almost inaccessible heights and their neighbors. The Sonnblick (Sun Glimpse) is a mountain nearly 10,000 feet high, the summit of which is less difficult of access, and where a house is now being erected which is to serve for meteorological observation. It will consequently be an observatory at the highest elevation in Europe—higher than that on Mount Etna, the Pic du Midi in the Pyrenees, and on the Sentis, canton of Appenzell. The first to draw the attention of meteorologists to this mountain as a suitable spot for an observatory was the owner of the Rauriser Goldberg, Mr. Rojacher. His private residence and mines are situated on the slopes of the Sonnblick, at an elevation of over 5,000 feet, and from these a wire ropeway, used for the purposes of the mines, but also practicable for passengers, leads up to a height of nearly 8,000 feet. Here a house has been erected for about twenty miners, who reside there also during winter. Thence the summit of the mountain is reached by an easy ascent over a glacier, in three hours. In descending, this portion may be traversed in low sledges in fifteen minutes.

The observatory now being erected on the summit, and which looks like a black spot when viewed from the Rauris valley, and from which the Sonnblick rises like a precipitous wall, 3,000 feet high, consists of a blockhouse, flanked by a massive stone tower forty feet high. To guard against the frightful storms raging round the summit, the walls of the tower are made of enormous thickness, while the blockhouse itself is anchored to the rock by stout wire ropes. Wood has been selected for the construction of the house, because it keeps out the cold better, which is most intense in that exposed spot in midwinter. The house contains two living rooms—one for the resident observer, and another for those scientific men who may ascend in favorable weather with a view of carrying on experiments. The walls of the house are paneled inside, and neatly covered outside by wood shingles. The tower will be fitted with all the instruments used in meteorological observations. As there is great danger to the building from the terrific thunder storms which burst round the summit, the observatory is protected not only by three lightning conductors, but also by a lightning-proof fencing. The solitary resident observer who has chosen to exile himself

from the outer world is one of the twenty miners permanently residing in the miners' house, 8,000 feet above the sea level, who is now undergoing a course of instruction in meteorology. But he will not be cut off entirely from intercourse with his kindred, for he will be able to keep up communication by telephone with the miners' house 2,000 feet below him, whence another telephone wire, 15 miles long, leads to Rauris. From there his daily record of observations will be wired to Vienna, thence to be flashed to the scientific world generally.

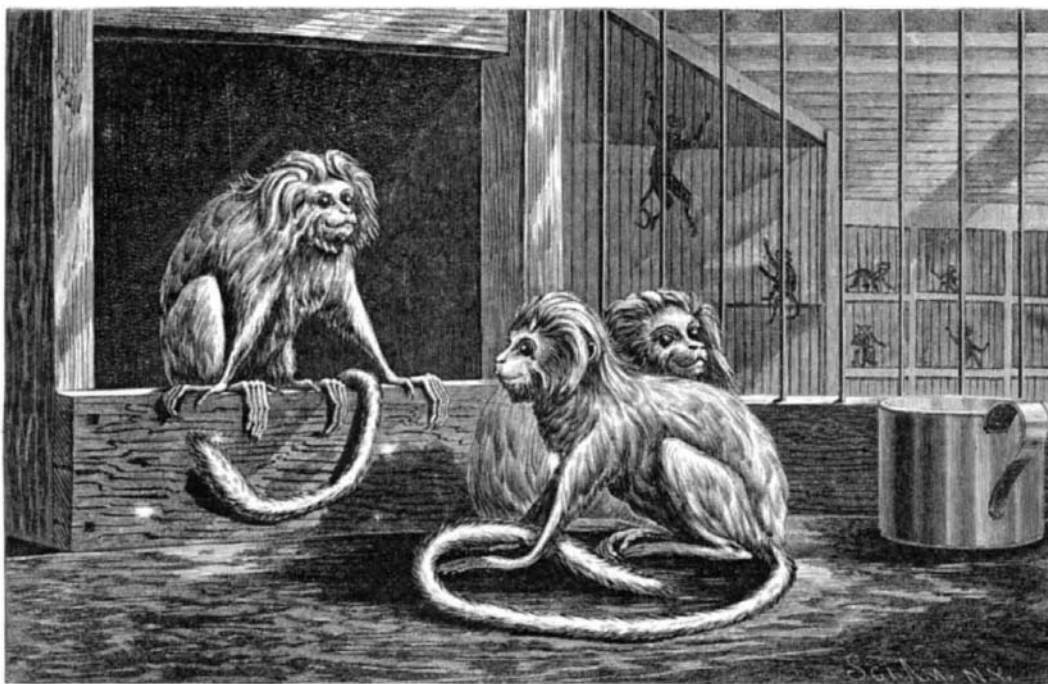
Comicalities in Plants.

There is Jack-in-the-pulpit, the flower of the plant known as Indian turnip (*Arisæma triphyllum*). Who could ever look at one of these singular blossoms, says a writer in the *Western Review of Science*, without that same stirring of the risible faculties which one experiences in perusing a parody or caricature, or witnessing a pantomime? The very sight of one is provocative of mirth. How many times in my school days did I challenge the teacher's frown by involuntary giggles at the whimsical look of the imprisoned Jack! Monk's hood, of the genus *Aconitum*, has quaint, comical flowers, suggestive of an old lady's head in a night cap. The well-known fly-trap, *Dionæa muscipula*, strikes the mind with all the effect of a joke. The leaves of this plant are fringed with stiff bristles, and fold together when certain hairs on their upper surface are touched, thus seizing insects that light on them. Seeing the leaf stand temptingly open, a poor fly pops in for shelter or food. No sooner has it touched its feet than some sensitive fibers are affected, and the cilia at the top closes in upon the intruder, imprisoning him as effectually as if a boy had taken him and closed him in a box. The pitcher-plant, or monkey-cap of the East, although not particularly ludicrous, has a whimsical arrangement which borders closely upon the human economy. To the footstalk of each leaf of this

plant, near the base, is attached a kind of bag, shaped like a pitcher, of the same consistence and color as the leaf in the earlier state of its growth, but changing with age to a reddish purple. It is girt around with an oblique band or hoop, and covered with a lid neatly fitted, and movable on a kind of hinge or strong fiber, which, passing over the handle, connects the vessel with the leaf. By the shrinking or contracting of this fiber, the lid is drawn open whenever the weather is showery or damp. When sufficient moisture has fallen, and the pitcher saturated, the cover falls down so firmly that evaporation cannot ensue. The water is thus gradually absorbed through the handle in the footstalk of the leaf, giving sustenance and vigor to the plant. As soon as the pitchers are exhausted, the lids again open to admit whatever moisture may fall; and when the plant has produced its seed, and the dry season fairly sets in, it withers, with all the covers of the pitchers standing open. The flower of the *bee orchis* is like a piece of honeycomb, and the bees delight in it. Then there is the snap dragon, the corolla of which is cleft and turned back so as to look like a rabbit's mouth, especially if pinched on the sides, when the animal appears as if nibbling. The flower of the cock's comb, and the seed-pod of the *Mostymia proboscidea* bear curious resemblance to the objects which have suggested their names. Some kinds of the *Mendicago* have also curious seed-pods, some being like beehives, some like caterpillars, and some like hedgehogs—the last being itself an essentially ludicrous object.

RARE SPECIMENS OF MARMOSETS.

Mr. Thompson, of Sixty-fifth Street and First Avenue, New York, a well known importer of rare and



THE SILKY MARMOSET. [HAPALE ROSALIA.]

curious wild animals, etc., has recently brought here some of the beautiful little animals shown in our illustration. They are a species of South American monkey, and, though not as intelligent as other monkeys, are easily trained, and make an interesting and affectionate pet. Its disposition is gentle, but its constitution is so delicate that it can only with difficulty be kept in temperate climates. The body is six to seven inches long, the hair of a golden yellow, soft, fine, and silky, and they live principally on insects, which they dig out of the earth or from under the bark of trees with their long fingers, although in captivity they will eat almost any vegetable or animal food. These marmosets are the only ones of the kind ever brought to this country; they come from Brazil, and are only found in a very limited locality near Rio Janeiro.

Heterogeneous Grafting.

Strasburger, in the *Berichte der Deutschen Bot. Gesellschaft*, vol. 3, records some curious results of his experiments in intergrafting various herbaceous *Solanaceæ*. Thus, he successfully grafted species of stramonium and common tobacco plant, henbane, *Atropa belladonna*, and petunia upon the common potato plant. Grafts of *Datura stramonium* and *Nicotiana tabacum* took remarkably well, the plants growing freely and coming into flower. Tschudy, however, long ago, had grafted *Lycopersicum* upon a potato stock, and so had gathered potatoes from the bottom and tomatoes from the tops of the same plant; but this is not so extraordinary, the two plants being so essentially congeneric.

The most remarkable result of Strasburger's trials was that, when *Datura stramonium* was grafted upon a potato plant, the potatoes borne by the latter, to all appearance normal, were found to be impregnated with atropine. He does not say whether these grafted into *Nicotiana tabacum* had their tubers infected with nicotine.—*American Journal of Science*.

New Mode of Reducing Metals.

A new and very promising mode of directly separating metals from their ores, by James J. Shedlock, of London, is now being tried on a practical scale in that city. Mr. Shedlock's method is carried into effect by passing the ore in a finely divided state through a bath of molten metal maintained at the temperature necessary to insure its combination with any free metal contained in the ore. But as most ores contain metals associated or in combination with the metalloids, it is necessary to decompose such compounds in order that the metals may be freed and in such a condition as to readily combine with the metallic bath. This is accomplished by forcing streams of reducing gases through the bath of molten metal simultaneously with the pulverized ore, which is conveyed into the bath at one end by feeding apparatus, the action of which is so regulated as to work in concert with the supply of reducing gases. For the production of these gases, steam is passed through superheaters, the outlets of which communicate with gas producers, which produce carbonic oxide and hydrogen gases, which are conveyed from the producers by tubes into the bath of molten metal at the point of entry of the powdered ore. In consequence of the affinity possessed by these gases for the metalloids, and also by reason of their high temperatures, the metallic compounds are decomposed and the volatile constituents of the ore are vaporized, which, with the earthy or non-reducible portions, by reason of their lesser specific gravity, rise to the surface of the bath of molten metal. The gases and vapors are conveyed through flues into chambers, where those that are condensable are thrown down and collected, the permanent gases escaping into the chimney shaft, and the earthy matters being removed from the end of the bath opposite the feeding end by skimming. The metals as they accumulate in the bath overflow into receivers through spouts, the inner mouths of which are so much below the surface of the metal as to prevent any dross from passing over. The metals as they collect are run into ingots or bars.

In treating some ores, more particularly those containing the noble associated with the baser metals, it may be found desirable to refine those metals without removal from the bath. For this purpose atmospheric air raised to the required temperature is forced through the molten metals in the bath, its passage being retarded by an inclined cover, thereby causing agitation of the mass and subjection of the metals and metalloids to the oxidizing action of the heated air. The oxides and other combinations thus formed with the vapors and gases rise to the surface, and are

conveyed by the flues to the condensing chambers, the refined metal being withdrawn from the bath and run into ingots. The superheaters, gas producers, and air-heating chambers are inclosed in a firebrick structure, into which the heated products of combustion from the furnace enter and circulate, thus raising the temperature of the apparatus and its contents to the required degree. The furnace gases then pass into the flues surrounding the bath containing the molten metals, eventually escaping into the chimney shaft. According to Mr. Shedlock, there are no exceptions to the ores which may be manipulated by his invention, the most refractory as well as the most easily reduced being successfully treated by its means. The ores of iron, when subjected to the process for the extraction of that metal, are stated to be most readily reduced, and its direct conversion at one operation into the different carbides of iron, varying from the softest cast iron to the mildest steel, easily accomplished: at the same time, all deleterious impurities are said to be effectually removed. The ores of zinc are also readily treated by this process as a continuous operation, the ore being fed into the apparatus, and the metal as it is distilled over passing away through the flues into the chambers, where it is condensed and collected. Should the process be as successful on operation on the large scale as is anticipated, we may expect an increased supply of gold, as by its means the most refractory ores of gold may be treated. By the ordinary system of separating gold from its ores, it is acknowledged that not much more than 50 per cent of the gold present is recovered. The details of the invention, as well as those of the apparatus by which it is to be carried into practical effect, have been carefully thought out, and the reasonableness of the *modus operandi* gives every hope of its commercial success.

To destroy ants, sprinkle powdered borax around the infested places.