

IMPROVED PULVERIZER.

We give an engraving of the Thompson Patent Pulverizer, improved by Stephen P. M. Tasker, of the firm of Morris, Tasker & Co., Lim., of Philadelphia. It has been so changed by Mr. Tasker that nothing now remains of the original mill but the ball held between flexible disks. These improvements are the result of experiments made at the Pascal Iron Works and during a year and six months' run at the mines. It is now perfected as a machine; and for the reduction of ores, etc., it stands, as we believe, unequalled. The efficient working of the mill cannot be realized unless it is seen in operation.

As the motion is a simple rolling motion no foundations are necessary. The pedestals are supplied with screws for raising or lowering the journal-bearing boxes in the event of the mill being set out of plumb.

In this mill centrifugal force is given to a loose ball. This is a principle which we believe has never been correctly applied before. The ball, B, is carried around the inner periphery of a steel shoe ring, C, by means of flexible disks, D, whose surfaces are chilled where they touch the ball to prevent wear. The disks are set up by means of nuts, I, on the shaft on the outside of the screen frames, and they are kept apart by a strong steel spring, E, between them on the shaft. The disks are carried by the clutches, which are fast to the shaft. On the sides of the machine are the screens, N. As the ore is fed in at the top by the automatic feed it drops into the mill, and, after being pulverized, is washed under the edges or rims of the disks, which have a clearance of one-eighth inch. All that is fine enough passes

The mill in its construction is very simple and easily set up. Any wearing part can be replaced in one hour. The lower half of each screen frame is supplied with a door, which is hung on hinges, so that it can be raised and the mill cleaned out while it is in operation, if necessary. It is not possible for rust gold to escape being brightened by the rubbing it receives while in the mill, and consequently caught.

All parts of the mill are made very exact by templates, which assures a fit when extras are required at the mines. Another great point in the mill is its very low speed and small power required. The large mill, which reduces 60 tons per day through a 60 mesh screen, and is really capable of doing much more, only requires 10 horse power, which drives it very easily, the speed of the shaft being but 190, while the ball makes about one-third less revolutions per minute.

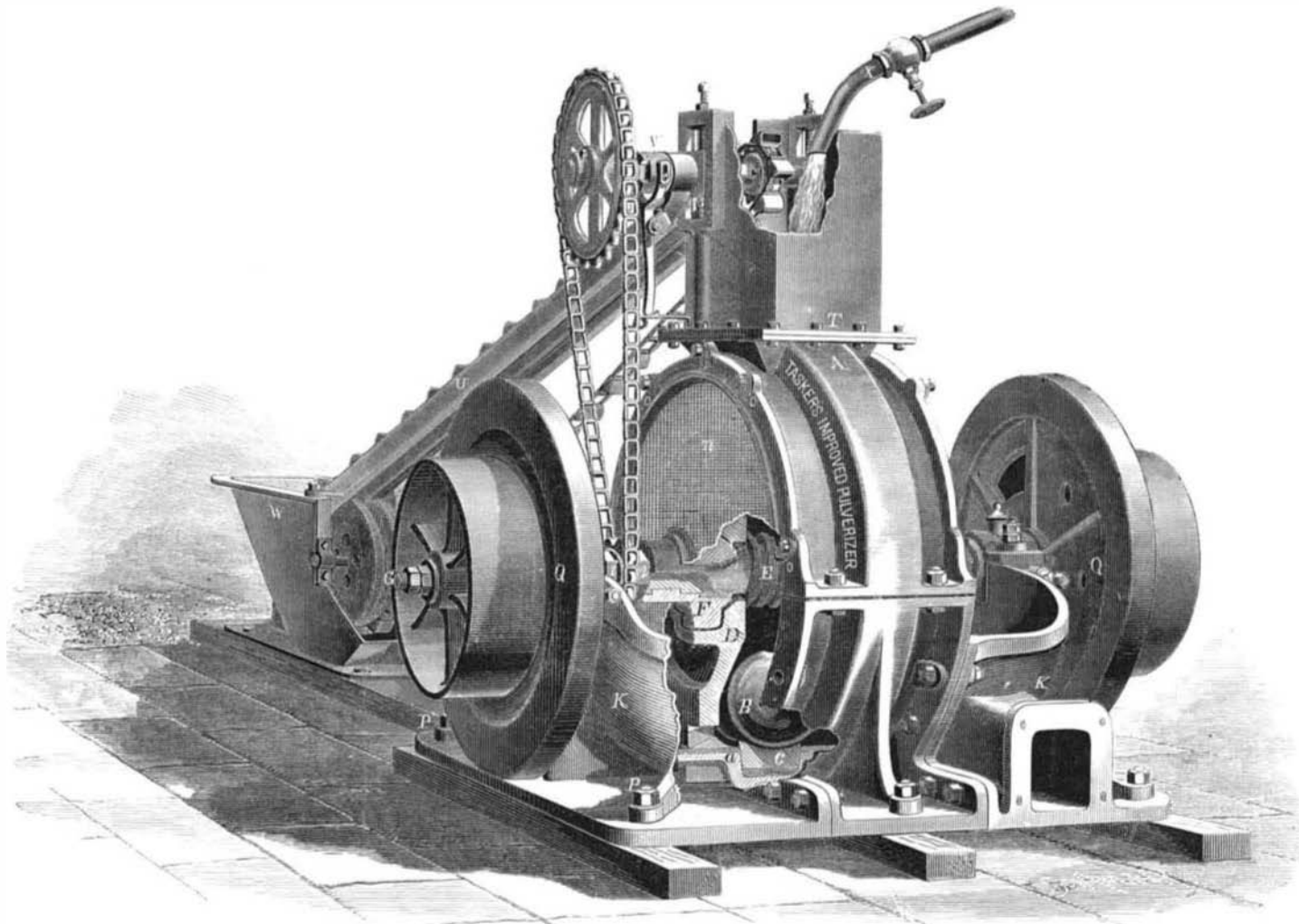
The Pit Dwellers of Yeso.

Professor John Milne, of Tokio, recently read before the Asiatic Society of Japan a paper on the pit dwellers of the Island of Yeso. According to the Aino accounts this race lived in huts built over holes, and knew the art of pottery. Mr. Milne found and examined pits on a small island near Nemuro, the northeast port of Yeso, and among the Kurile Islands. Near them were found flint arrow heads and fragments of earthenware. The Japanese say that the pits, which are rectangular in shape, were inhabited by a race of *Kohito*, or dwarfs, which was exterminated by the Ainos. In the extreme north of the Kuriles Mr. Milne met with the

Deleterious Effects of Boracic Acid.

Since Dumas showed for the first time, now nearly twenty years ago, that borax had, like carbolic acid and other antiseptics, the property of preventing fermentation, it has formed part of several antiseptic mixtures of salts proposed by various inventors for the preservation of meat, fruits, vegetables, etc. Boracic acid has likewise come in for its share of patronage in this respect, and lately Professor Barth has brought forward a mixture of glycerine and boracic acid, which, according to his experiments, possesses the power of preserving various perishable substances in a remarkable manner. The same may be said of *corrosive sublimate*, *arsenious acid*, and a quantity of other chemical products which we should be sorry to see used to preserve articles of diet in daily use. However small the quantity of these substances which may be used in order to exert the preservative effect, it is evident that by the daily consumption of substances so preserved, the animal economy absorbs in the long run a large amount, and in a longer or shorter interval the health is impaired.

Such, according to Mr. Gade, is the case with *boracic acid*, as he states in a letter to the *Times*, which is reproduced in the *British Medical Journal* and other periodicals. Mr. Gade, while residing in Sweden, used boracic acid to preserve the milk supplied to his household from decomposition. For some time no ill effects were noticed, but after using the milk for a short time two of his young children fell ill; they became languid and drowsy, and their appetite failed. This was at first attributed to the hot weather, during which the boracic acid had preserved the milk quite

**TASKER'S IMPROVED THOMPSON PULVERIZER.**

through the screen; that which is too coarse is caught in the take-ups and forced back under the ball again until it is fine enough to pass through the screens.

The fineness depends on the number of mesh of the screen and the quantity of water used; the more water used up to a certain quantity, the more pulp will be washed out. With very little water a less quantity will be done, but it will be very much finer. To give the mill all the water that can be used requires but 400 gallons per ton of pulverized ore. This compares very favorably with the amount of water used by the stamp mills in the Black Hills, where they must economize water. They use 2,500 gallons per ton of ore. At the Rara Avis mine just enough water to carry the pulp over the plates was found to be all-sufficient. This mill, which has used the machine longest, is doing satisfactorily from 3 to 4 tons per hour, with but little wear.

There is no wear of note on any part of the mill except on the ball and shoe ring. The latter is made of rolled steel, and will wear for several months. The ball is made of the very best cold blast charcoal iron, deeply chilled, which gives it a degree of hardness not exceeded by the best tool steel. The wear on the ball is very slight; at the rate of 60 tons per day the ball will last from two to three months; in fact the total wear is not 20 per cent as much as on a stamp mill with an equal capacity. The amount of slimes made is but a very small percentage of that made by a stamp mill, and from the peculiar form of the pulp is more readily concentrated, as shown by actual workings on a very large scale.

aborigines of these islands dwelling in huts built over pits, which were, in general appearance, identical with the pits found further south. In Saghalin and Kamschatka also, certain tribes dwell in pits. The general conclusion to which the writer comes is that the modern representatives of the pit dwellers are the Kurilsky, and some of the inhabitants of Saghalin and Kamschatka, who, like the Esquimo of the Atlantic seaboard, had in former times extended much further south.

Several facts were also adduced to show that the shell heaps of Japan were of Aino formation. Mr. Milne suggested that the hairy Ainos were connected with the hairy Papuans, who at one time extended from their present home in the south in a continuous line through the Philippines to Japan. Malay races invaded this line in the Philippines, so that all that remain of the aboriginal stock are the hairy Aeta. In Formosa, Oshima, Satsuma, and other parts of Japan, links of the hairy, large-eyed, round-faced Aino type are still to be found. The modern Japanese invaded the line from the direction of Corea, and as they exterminated or drove the Aino toward the north, the Aino in his turn pressed upon the pit dwellers, who retreated to more northern regions, leaving behind him, as indications of his former presence, the pit-like depressions found in so many parts of Yeso.

DRIED buffalo meat and tongues, to the extent of 9,000 pounds, which reached Springfield, Dakota, lately, was pronounced superior to dried beef.

sweet and pure; but it was soon traced to this article of diet, and a physician who was called in had no doubt of it, the boracic acid acting, he said, as an anodyne. The *British Medical Journal*, in its comments on this, while admitting that "the action of boracic acid has not been much investigated," nevertheless boldly asserts that "it cannot be a poison of much strength," but as it is now a well known germicide, its effects on man cannot be inert.

Statistics of Woolen Manufactures.

The census statistics of woolen manufactures shows 2,684 establishments of all kinds, giving employment to 160,998 hands, who received in wages during the year \$47,180,618. The value of materials used was \$164,114,799, and the value of the products was \$267,699,504. Classified, the products were: Woolen goods, including blankets, all sorts of woolen dress goods, woolen yarn, and woolen rolls, \$160,606,721; carpets, other than rag, \$31,792,892; felt goods, \$3,619,653; worsted goods, \$33,549,942; wool hats, \$8,516,569; hosiery and knit goods, including those mixed with cotton, \$28,613,727.

THERE have been imported into this city recently from Egypt 10,000 barrels of onions. This is said to be the first importation from that region; the gardens of the Bermudas and Portugal having hitherto supplied the deficiencies of our home fields. The Egyptian onions are said to keep better and longer than those of more western countries, giving them especial value in ship supplies for long voyages.