Correspondence.

Small Motor Wanted.

To the Editor of the Scientific American:

It is a marvel that no one has as yet invented a moderately sized machine for working punkas in India. Each room in three-fourths of the stations of this country has its punka worked by a cooly, and the annual cost of these men, whose pay varies from three to six rupees ($1.50 to $3) a month, is enormous. In large establishments, such as barracks, of course, very many are required, but in private houses, too, they may often be counted by the dozen.

Not only are they very expensive, but they are at the same time, in nine cases out of ten, very useless, and many are the sleepless nights passed by the hapless European, due solely to the cooly, whom it is impossible to keep awake. The moment the punka stops, not only does the heat become oppressive, but bloodthirsty mosquitoes in myriads swoop down on the unfortunate victim. He then, who would invent a simple machine to work a punka that could be regulated by the owner himself and render him independent of the drowsy cooly, would not only confer an unspeakable blessing on the Anglo-Indian community, but would also make an enormous fortune commercially, for once let their value be known they could not be made quickly enough.

In some barracks and hospitals there are already punkas worked by steam, but it is not these we want; it is a common, simple machine that could, if necessary, be moved from room to room. As the resistance offered by a small punka is very slight, it would require no very powerful mechanical contrivance to work one for eight hours, say, before it required fresh adjustment.

If you will publish this far and wide through your valuable columns, it may lead to some invention that will at once secure a fortune to the inventor and prove an inestimable boon to the sufferers who are dependent upon drowsy, frail, human machines for their comfort and repose.

F. W. MAJOR.

Calcutta, September 5, 1881.

REMARKS.—A machine such as our correspondent describes is wanted almost everywhere. Its invention would be of great value. We will offer a few suggestions to those who may wish to study the subject. The punka referred to consists of a large fan suspended from the ceiling of the apartment and operated by a rod which the attendant pushes back and forth. To work a punka so as to produce a sensible effect in the hot climate of Calcutta requires the exercise of a force equal to about one-tenth of a horse power. To the majority of people it looks as if this small force might be easily applied by a coiled spring or a weight. Let us try the weight. How large a one is needed? For a full horse power a weight of 33,000 pounds descending one foot in a minute is required. To drive a punka, therefore, one-tenth of the above, that is, a weight of 3,300 pounds descending one foot, will do the business for one minute. To make it run ten minutes the weight must be wound up ten feet high, or six winds an hour. In the household so weighty a machine would be cumbersome. Springs would occupy less space, but they would still require to be pretty heavy and must be frequently wound. If our correspondent has gas he can readily obtain a small gas motor which, on a consumption of six cubic feet per hour, will drive one punka. Next to that probably the best motor would be water. A tank filled with water eleven feet square and same depth, placed twenty feet above ground, if allowed to discharge its contents in a suitable manner upon a small wheel at the ground, would drive a punka for eight hours. The water must then be pumped up again into the tank. There is no royal way to realize mechanical power. It is simply the lifting of a dead weight, either by turning a wheel or working a pump, or carrying water upstairs in buckets, or using the power of the wind, running streams, or a combustion of fuel.

The Influence of Atmospheric Pressure on Earth Currents and Mine Gases.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of October 22, there was an article referring to some observations, which, if correct, establish the influence of atmospheric pressure on the flow of springs. This recalled to me a fact observed years ago, and which strikingly exhibits a consequence of an increase or decrease of this pressure that we do not usually think of.

I used to live in Switzerland. Years ago a gentleman of my acquaintance attempted to dig a well. The ground proved to be sand and gravel to a depth of 93 feet, when at last water was found. The well was walled in in the usual fashion and a force pump set in. But soon the water disappeared. The well was deepened again, until at a depth of 115 feet water was reached again. But as the nature of the soil continued the same this water also soon disappeared, and the well was therefore given up and covered over. Soon after a remarkable phenomenon was observed. At certain times a violent wind would blow from the well, so strong as to blow a handful of straw held over it eight or ten feet in the air. At other times the current would run in the opposite direction. Soon it was observed that a change of direction in the current of air would precede a change of weather: an upward current came to mean rain, a downward direction fair weather. The well was consulted a good deal by the neighboring farmers, especially in haying and harvest time, and proved a very sensitive barometer. Of course the explanation suggested itself at once. A decrease in the pressure of the atmosphere would release a great quantity of air pent up under the previous higher pressure in the extremely porous soil, for which this well proved a convenient drain. The opposite would take place under an increasing pressure, *i. e.*, during a rise of the barometer.

About a year ago or more, there appeared in the *Nineteenth Century* an article by Mr. Plimsoll, discussing the possibility of preventing explosions in the coal mines, an article which elicited several others on the same subject. In Mr. Plimsoll's article the well known fact was alluded to that during a low pressure of the atmosphere the air in the mines was much worse than when the barometer stood high. The cause of this is usually assumed to be a less free circulation of the air. Would not the above mentioned observation on the well suggest another cause—an enormously increased discharge of carbureted hydrogen gases under a lower atmospheric pressure?

The same thing must take place over very large areas every time when the barometer indicates low atmospheric pressure. A good deal of the air escaping from the ground must be miasmatic in its nature. Pettenkofer's investigations leave no doubt of this. Would not this account also, in some degree, for the rather languid feeling that is very prevalent whenever a low barometer prevails over a large area for any length of time? J. J. SCHOBINGER.

Chicago, October, 1881.

The Deadly Fly in Texas.

To the Editor of the Scientific American:

In your paper dated September 24, page 196, I was much interested in the report of a disease produced by a "deadly fly," the *Calliphora anthropophaga*, found by Conil in the Argentine Republic; and so similar in many particulars is the fly, the worm (larvæ), and the disease produced by it, as well also as its favorite habitat, to the similar, if not identical fly, the stock pest of our summer and fall months here, that I may be excused for sending you a hastily written report of a case which occurred in my practice, selected from among others treated only on account of a hidden pathological condition which it seems possible may have been revealed through the agency of the worm.

At the time the article was written no volume of reference was at hand, by which I could give the systematic name, and hence reported it from an unscientific standpoint, using the vulgar name, the one by which it is known here, "screw worm."

From the very great resemblance of the illustration in your paper to the Texas "screw worm" and also the parent fly, I am inclined to think they are identical.

My own impression is they are deposited prehatched, as they attain their full growth and size by the fourth or fifth day, which is probably three-eighths to half an inch in length instead of *five*-eighths, as mentioned in the report.

It is singular that they seem confined to the trans-Mississippi, and, I believe, south of the 34th or 35th parallel.

Accompanying this note I forward you the report mentioned. T. H. CLARK, M.D.

Reagan, Falls Co., Texas, October, 1881.

We have received the report mentioned by Dr. Clark. The account of the case that occurred in his practice in 1878 is very interesting, and corresponds closely with the description he refers to in our paper of September 24, concerning the Argentine fly. We think that there have been instances of loss of life in this city from the bites of a fly that hovers about the hides that come from Buenos Ayres.

Dr. Clark's report was published in the *Virginia Medical Monthly* for June, 1879.

Painting of Cement and Plaster.

Much difference of opinion prevails respecting the question of painting Portland cement, and we have seen work painted a few weeks after the cement has set, which has stood well. There is one point which has a great deal to do with the question of successful painting, namely, the absorbency and dryness of the brickwork itself. Many new walls, saturated with moisture, are cemented, and in this condition no paint can possibly stand if laid on too soon. It is a good and safe rule to enforce that Portland cement work should not be painted within a year of its completion, to allow it to dry thoroughly: but we are safe in saying the majority of new fronts are painted before they have been finished three months. A very desirable precaution seems to be to coat the work with linseed oil first.

The painting of plaster work requires the same care, and the lime works out in small bubbles, destroying the paint. In painting plaster, white lead and linseed oil, with a little drier, is recommended by one authority. This coat should be of the consistence of thin cream, so that the oil is absorbed into the plaster in a few hours. In a day or two another thicker coat may be applied, and a third a few days after rather thicker, followed by the finishing coat. Four coats are not too much for good work. By the absorption of the oil into the plaster the surface becomes hardened, and may be washed. Another method to facilitate this absorption is followed by painters, which is to give the plaster two or three coats of boiling linseed oil, and then to apply the other coats of paint. We are inclined to think the application of the oil before the paint a better plan, to insure a thorough saturation of the material. The color of Portland cement, and the uneven tints it sometimes assumes, is the main reason why painting it is resorted to. For this reason we think it may be worth the attention of manufacturers to turn their consideration to the subject, and those using cement as a stucco might also prevent a blotchy and uneven tint by attending to the preparation of the wall and the sand they use with the cement.—*Building News.*

AGRICULTURAL INVENTIONS.

Mr. Ashley E. Armstrong, of East Claridon, Ohio, has patented an improved conductor tube for grain drills and fertilizer distributers, so constructed that the plows can adjust themselves to uneven land, and can rise to pass obstructions without disarranging the tubes or interfering with their proper operation.

An improved stalk rake has been patented by Mr. Henry Grebe, of Omaha, Neb. This rake is intended for gathering cornstalks and other stalks and rubbish into windrows, to facilitate the preparation and cultivation of the land.

An improved sulky harrow has been patented by William Hannum, of Mount Gilead, Ohio. The invention consists of a harrow composed of two wings or sections hinged to each other, provided with guide rods and suspended from the axle, and three independent shafts journaled in standards secured to the axle, and provided with levers and eccentrics carrying chains secured at their lower ends to the harrow sections, near their outer and inner edges, whereby the central portion of the harrow or either harrow section can be raised or lowered independently of the other section to avoid obstructions, or both sections can be raised or lowered when desired.

An improved cornstalk loader has been patented by Mr. Peter C. Schlechtmann, of Arlington, Wis. This invention consists of a derrick of peculiar construction operated by a long lever and cords and pulleys.

A machine for splitting and breaking cornstalks has been patented by Messrs. Jacob Behringer, of Bowmansdale, William Stouffer, of Dillsburg, and Joseph R. Potts, of Mechanicsburg, Pa. In this machine the cornstalks to be operated on are passed in between a pair of feed rollers, to and over a stationary breaking bar, where they are first split by the action of a revolving winged cylinder of knives, and subsequently broken down across the edge of the bar by the wings or arms of the cylinder. The split and broken cornstalks can be handled by a fork with as much ease as hay and straw; they form better feed for cattle than when whole or merely cut crosswise; and the refuse stalks will be much sooner converted into manure.

A pulverizing attachment for plows has been patented by Mr. Tapley B. Maddux, of Denton, Texas. The object of this invention is to pulverize furrow slices as they are turned by plows; and it is particularly designed to lessen the draught in such devices by arranging the cutters at the top of the mould board in such manner as to offer but little resistance to the passage of the furrow slice. To this end the curved mould board of the plow has a bar secured to its upper curved edge, on which bar are fastened a series of cutters arranged to project upward and inclined or curved to the rearward, also formed with shoulders which rest upon the mould board. The cutters are sufficiently long to reach through the furrow slice.

Mr. Armand Richard, of Grand Coteau, La., has patented an improvement in plows, in which provision is made for adjusting the blade of the plow, as it wears, by loosening a clamp bolt and removing the teeth of a clamp from notches in a flange with which they engage, after which the blade may be set further forward. The clamp bolt does not pass through the cutting blade, consequently the latter is not weakened by a hole for the bolt.

The Panama Canal.—Work Done.

The president of the American Branch of the (De Lesseps) Panama Canal Company has issued a statement of the condition of the work. Notwithstanding the obstacles encountered in the luxuriant vegetation and the thick forests, there has been opened and recorded transversely to the axis of the canal over 200 kilometers of paths, and also a passage from 20 to 30 meters has been made from one end of the Isthmus to the other, according to the proposed lines of the Canal Commission. For meteorological studies, to which especial attention has been given, four stations have been established—at Colon, Gamboa, La Boca del Rio Grande, and Naos Island. Geological surveys have been made and are now in progress. It has been ascertained that between Colon and Lion Hill the canal will not encounter any rocks. At the present time two steam sounding apparatus are being put up similar to those at Colon. At this station the samples brought up by the spoons have given an exact structure of the soil. It is shown to be a succession of layers of clay, representing the degradations of a greenish pyroxenic rock, which through its gradual degradations and decomposition has produced this formation. At other places the ground, bored to a depth of 25 meters, has revealed nearly every way, instead of successive formations methodically arranged, a chain of derived rocks growing softer and softer. The thickness of the mellow soil is quite remarkable, and, in a word, the soundings have given results beyond expectation on the whole line of the canal.

Work on the canal has been commenced. The company now have 200 cars, 12 locomotives, 2 pontons, 2 steam cranes, 18 flatboats, 2 dredges with change pieces, ribbon saws, rails, etc., a part of which is already at Colon and the remainder is on the way. The storehouses at Colon cover an area of 1,400 meters, and are full. Five barges and two steamboats are plying upon the Chagres River. Another steamboat at Panama is used for hydrographic surveys of the bay.