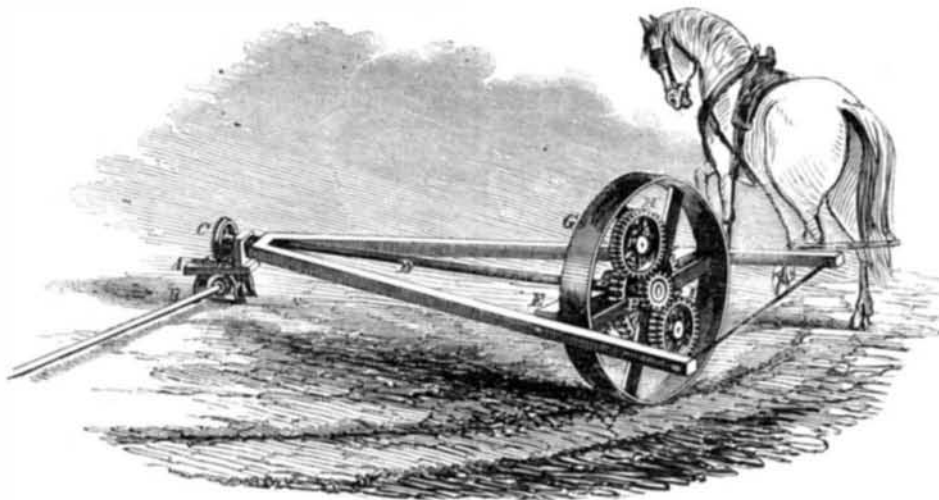


IMPROVED HORSE-POWER.

A "horse-power" is a prime motor for driving subordinate machinery, and it occupies the same place on a farm or in a small factory that a steam-engine or water-wheel does in other cases. The agent of motion is animal force, and the modes of applying it are as various as the amplifications of steam and water engines. It is one of the oldest of motors, and one of the most necessary; and the many improvements made of recent years in it afford evidence that different circumstances call forth new adaptations and arrangements of mechanism, as in this case, which tend to render this class of motors more useful and more economical for several applications.



COLTON'S IMPROVED HORSE-POWER.

The "horse-power" illustrated in the annexed engraving is the invention of Albert B. Colton, of Athens, Ga., and the improvement embraced in it consists in arranging a stationary driving-gear upon a triangular frame placed centrally with the main driving wheel, so that the hub of this gear shall form a bearing or axle for the driving wheel, and the box of it a bearing for the horizontal main shaft; also arranging a series of spur gearing on either side of the main wheel, so as to communicate a swift rotary motion to a vertical shaft, from which the power is transmitted by belts, &c., to drive the machine for threshing, grinding, churning, sawing, or any purpose whatever.

A is a plate and low standard frame to support the machinery on the floor. In this frame is supported a short vertical stud shaft, with a bevel gear on its top, and one on its under side. The under bevel pinion gears into another on the inner end of the secondary horizontal shaft, B, and gives motion to the latter, which is carried under the track to any place desired, and from a pulley on its outer end motion is communicated to any other machinery that is to be driven. C is a bevel wheel on the inner end of the main horizontal shaft, D, which is supported in a journal-box in standard-frame, A. The latter is formed of such parts, and secured in such a manner by bolts and screws that it can be easily taken apart and put together, so as to render it very convenient as a portable power. The shaft lever, D, is composed of three pieces connected together in triangular form. To the crow-brace, E, is secured a spur wheel, F, which has a hollow hub, through which the main shaft, D, and in which it is sustained, passes. Upon the hub of wheel, F, the large traction ordinary wheel, G, is fastened. On the outer end of this hub is an annular collar, which can be removed at pleasure by unscrewing the box-nut which holds it in place, for the purpose of detaching the wheel from the hub when required. On the end of shaft, D, is a pinion which is shown in the figure between the wheels, H I, which actuate it. These two wheels are secured on shafts which have bearings in journal boxes, and they have pinions on the other end which take into a large toothed wheel, F. A rapid motion is by this train of gearing thus communicated to the central pinion, P, on the outer end of main shaft, D, which is thus revolved with a very rapid motion, although the pace of the horse, which is attached to an arm on the angle-bar, may be very moderate. As the horse travels round, the large traction wheel on the ground rotates, and communicates rotary motion through wheel, F, to the intermediate gearing described, and thus revolves the

shaft, D, communicating double motion to the wheel, C, on the inner end, which gives motion to the secondary driven shaft, B. To prevent slip for some purposes, the traction wheel may have its face cogged.

In some situations and for certain purposes, the gearing at the inner end may be arranged to be carried above, such as to the ceiling of a shop instead of below on the ground. The principle is the same in both cases. This traction arrangement is very simple and effective for obtaining a very rapid motion on a horse-power, and it no doubt will meet with that consideration which it deserves from all those interested in this most necessary and useful class of machines.

For more information, address Mr. Colton, as above Patented May 24, 1859.

THE AURORA AND COSMICAL PHENOMENA.

The *Boston Journal*, of the 12th ult., after speaking of the electric disturbances coincident with the aurora of the 28th of August (already noticed by us), says that on the 19th of February, 1852, when a similar coincidence was noticed, there was at the time an eruption of Mauna Loa, the great volcano on Hawaii, on the Sandwich Islands; and that on the 17th of December, 1857 (the same day on which the great earthquake occurred in Naples), a brilliant aurora was observed in the neighborhood of Boston. A learned correspondent sends us the extract from the *Journal*, with the following remarks:—

MESSRS. EDITORS:—In the article from the *Boston Journal*, the attention of scientific observers is called to the possible connection of the aurora borealis, and other magnetic disturbances, with the physical condition of the earth. It is a truly interesting and important subject of inquiry, and recent observations are tending very strongly to show the probability of such a connection. The theory of Professor Olmstead seems, as justly stated by the editor, to hardly cover the relations of these phenomena with the earthquake and volcanic action which is noted so frequently to coincide with disturbances of the magnetic-needle and with auroral displays. The activity of scientific men is now so great in Europe and America that it is difficult for common readers to keep posted in the particulars of these delicate researches and discoveries, since they are published in various languages. Several German and French philosophers have lately occupied themselves with the study of the phenomena; and we are not without one close observer, at least, in our own country. So far as the history of the physical sciences at present show, Boston itself has the lead in discovery in this department of study. I have been favored with the perusal of a letter from an eminent French *savant*, who, in speaking of the subjects under consideration, says: "I inform you, also, that Dr. Ami Bone, of Vienna, in Austria, has published a work which seems to have some analogy with that of Dr. Winslow. Its title is, 'The Parallel of Earthquakes, Northern Lights and Terrestrial Magnetism, and their Connection with the Plastic Condition of the Earth and Geology.'" (*Rep. of K. K. Academy, Nov., 1856.*) I believe, however, that Dr. Winslow, in publishing his "Principle of Variation of Density in the Matter of the Globe as it moves in an Ellipse around the Sun" (*Proceedings of Boston Society Nat. His., Feb., 1854*), has proved his right of

priority. In April, 1855, we find a memoir, by the same gentleman, in the published transactions of the California Academy of Natural Sciences, entitled, "Causes of Tides, Earthquakes, Rising of Continents, and Variations of Magnetic Force," in which the results of his observations for many years, and the largest generalizations on these important subjects are clearly and succinctly set forth. In summing up this memoir, he says: "Cosmical magnetism is a planetary force produced by the constantly varying intensity of the forces of the molecules which, in the aggregate, constitute the planetary masses; and terrestrial magnetism (as a consequence and secondary principle) is a power radiating from every point of the globe, and generated within it through its orbital relations to the solar center (its orbit being an ellipse and the sun fixed in one of the *foci* of the ellipse), whereby, it being at different distances from the sun at different periods of the year, the number and intensity of terrestrial phenomena of all sorts, transpiring in the air, ocean, solid crust and molten interior, differ accordingly." And as a consequence of his theory, he continues: "If all these phenomena are studied by physicists from a different point of view than that from which they have hitherto been studied, I believe the most remarkable advances in every department of physical science will rapidly be made, and a new world of knowledge opened to future generations of a meteorological, geological and astronomical character, of the value and extent of which it is not now possible for us to conceive."

Thus, it seems the suggestions of the *Boston Journal* have been already anticipated by scientific students, both in this country and in Europe. The appearance of Donatti's comet, last year, presented such marked illustrations of the truth of Dr. Winslow's deductions that Professor Pierce, of Cambridge, declared at Springfield, last month, his mathematical convictions of the existence of the cosmical repulsion as an equal (if not greater) force in the phenomena of the celestial bodies with that of gravitation; although, two years before, at Montreal, he discarded all ideas of such a force as purely speculative. And it is singular that the facts, as suggested by the *Journal*, seem to obtain more confirmation by the occurrence of a destructive earthquake at Sorcia, in Italy, about the time of the grand auroral display of Aug. 28th.

OBSERVER.

TO PROTECT ANIMALS FROM FLIES.

MESSRS. EDITORS:—Your correspondent who wishes to learn of something that will prevent flies from pestering horses and cattle, will find that a wash prepared by steeping walnut leaves in water will do it to his satisfaction. A gallon or more should be manufactured at a time, and made strong, and placed in the stable for daily use. Sponging the animal over once in the morning will answer for the day.

EXPERIENCE.

Dalton, Mass., Sept. 20, 1859.

THE ALBERT COAL.—We have received a letter from F. Macdonald, Esq., agent of the Albert Mining Company, in which he states that our correspondent, L. A. R. (on page 151 of the present volume of the *SCIENTIFIC AMERICAN*) was in error regarding the locality of this mine, and also in respect to the companies which make oil from the coal. The mine is in Albert county, New Brunswick, about five miles from Peticodiã river, at the head of the Bay of Fundy; not in Prince Edward's Island. The coal is not used at Hunter's Point, L. I., but only at the Kerosene Oil-works, South Boston, Mass.; Portland Kerosene Oil-works, Portland, Maine; and at the New Brunswick Oil Company's Works, St. Johns, N. B. No other companies have had any of the Albert coal this year. The above three companies are under contract with the Albert Mining Company for the whole product of the mine until January, 1864.

C. P. Garman, of Dayton, Ohio, sends us the following recipes:—

LINIMENT FOR SPRAINS, &c.—One pint spirits of alcohol, 1 drachm of camphor, 2 drachms of opium and 2 drachms of spirits of turpentine.

COUGH SIRUP.—One ounce alecompane, 1 oz. comphry, 1 oz. hoarhound and 1 oz. wild-cherry bark. Put these in 1 quart of water, and boil down to 1 pint. Add 3 cups of honey, 1 cup of sugar, and 1 table-spoonful of sweet oil. Take one table-spoonful every two hours.