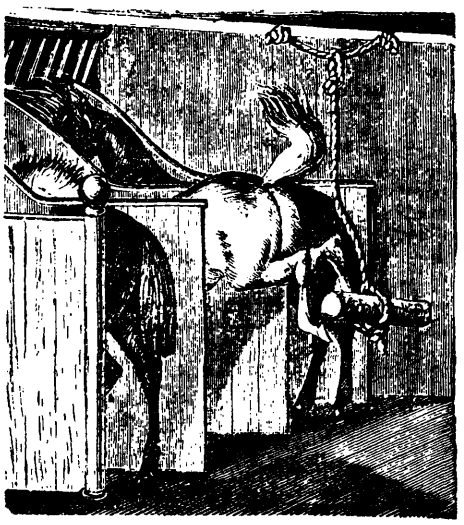

DISCIPLINE FOR A KICKING HORSE.—The method (illustrated on above) of curing the habit of kicking in the stable, so frequent with nervous horses, is given, with the accompanying sketch, by a German subscriber. It is to hang in a proper position, behind the horse, a log of wood, by means of a rope fastened to the beam. When the horse kicks, the log is struck, and that swings back against him, with sufficient force to suggest that his kick is always returned. This lesson is soon learned by him and becomes effective. When not in use, the log is hung up out of the way by a hook upon the beam.—*American Agriculturist.*

Scientific.

THE VELOCITY OF SOUND.—A memoir is published by William W. Jacques, in the February number of the *American Journal of Science and Arts*, on the velocity of very loud sounds. The author gives an account of experiments, made at the United States Arsenal at Watertown, Mass., for the purpose of obtaining automatic measurements of the velocity of sound near a cannon. Behind the cannon—a six-pound brass field-piece—he placed at distances of 10, 30, 50, 90 and 100 feet from its mouth ingeniously constructed membranes, having an electrical connection with a chronograph capable of recording .00001 of a second. He found that the velocity of the sound was not greatest at the immediate rear of the cannon, but at some distance from it, where it rose to a maximum "considerably above the ordinary velocity, and then fell gradually to about the velocity usually received." When the cannon was turned at right angles to the line of the series of membranes the distance of the maximum velocity of the sound came nearer the cannon. From these facts the author concludes that the velocity of sound is a function of its intensity, and that the experiments upon the velocity of sound in which a cannon is used contain an error, probably due to the bodily motion of the air near the cannon. The employment of a musical note of low intensity is, therefore, recommended to correctly determine the velocity of sound.

IS CONDENSED STEAM EXPLOSIVE?—The following appears in a Boston daily paper: To economize heat, it is common to pass the steam from the cylinder to the tender in a locomotive, to be used again and again. A similar process through the condenser is in vogue on board of steamers. For some time Mr. R. C. Blackall, Superintendent of the motive power of the Delaware and Hudson R. Co., has been experimenting with this condensed steam, and among other important discoveries, has found that it becomes highly explosive without giving any warning, under certain circumstances, which are liable to occur at any time. He thinks it probable that some of the missing ocean steamers have been blown up by condensed steam. Locomotives, he contends, are exposed to the same danger. Now if this is so, Mr. Blackall ought to make it known as extensively as possible for the safety of life and property.

NEWLY DISCOVERED FOSSIL BIRD TRACKS.—The lower Connecticut valley seems to be quite as full of giant fossil bird tracks, in stone, as the upper region about Turner Falls, where Professor Hitchcock made his discoveries. Messrs. Coe & Fowler have just uncovered, in their quarry on Powder Hill, half a mile west of the Middlefield and Durham station, a layer of stone indented several inches with bird tracks. Several on a line are three and one-half feet from each other, and measure fourteen inches on the centre claw, and outside claws being separated about a foot at the points. These tracks were made in the mud and ooze of a shore that was evidently washed by the tides, and each incoming tide deposited a layer of silt, or mud, which became sufficiently hardened in the sun to retain the form of the impression, and in that shape the mud was slowly turned to freestone.—*Hartford (Conn.) Times.*

CHEAP STEEL.—The London *Times* remarks that "the Bessemer process has ruined the manufactured iron trade." But it has done more than this; it has distributed among many countries the manufacture of cheap steel, and thus enabled them to supply more fully their own metallurgical wants and the metallurgical wants of other countries, in lieu of their own previous partial dependance upon Great Britain for both iron and steel products.

CASTING METAL.

Hollow or ring-shaped ingots of steel or other metal are ordinarily made by casting the metal in a mold, in the centre of which is placed a core of some suitable material, by the removal of which, after the ingot or casting has become solid, the required central hole is left. This plan of casting the metal round a core presents several inconveniences, one of the chief of which is that the casting, if it is thin, is often less sound or less solid than a block of metal would be of the same bulk, but cast without the central hole; moreover, special precautions must in most cases be taken to avoid the risk of the metal cracking or tearing as it contracts round the core in the act of cooling.

With a view to overcome these inconveniences, Messrs. Taylor & Wailes, of Panteg, propose, instead of making such ring-shaped ingots or castings in a mold in the centre of which a core is fixed, by the removal of which, after the metal has become solid, the required hole through the ingot or casting is left as above mentioned, they pour the metal into a mold, which is kept in rotation by preference round a vertical axis by mechanical means at such a high velocity that the liquid metal, as soon as it is poured into the mold, is driven by the centrifugal force caused by the rotation of the mold against the inner circumference of the latter, so that as it cools, the metal becomes solidified in the form of a ring-shaped or hollow ingot or casting, the outer surface of which has the form of the mold, and the inner surface is more or less conical (or if the mold be rotated at a high velocity, the casting will be nearly cylindrical,) forming, in fact, a ring-shaped section of the paraboloid of revolution which is the form taken by the free surface of a mass of heavy liquid in rapid rotation round a vertical axis. The axis of rotation, instead of being vertical, may, if found more convenient, be inclined or even horizontal, provided that the velocity of rotation of the mold be sufficient to throw the liquid metal (when poured into it) into the required annular form.