possible to give in detail the various positions into which the machine can be adjusted, but those acquainted with machinery will readily see that the apparatus will really form a foundation upon which almost any attachment for special work can be placed. The bed of the machine is very strong, and the slots in it can also be used to hold the various attachments; so that, without any alteration in the frame, the various devices can be put on or taken off at a moment's notice, and thus one machine can be made to take the place of several special machines. A number of attachments have already been applied to this machine, among them those adapted to the following purposes: Jointing plows (as shown in Fig. 2), beveling boiler plates, grinding the faces of pulleys, grinding car brasses, etc. Four different sizes of machines, after the style of the one illustrated, are made, with 1¼, 2¼, 3, and 3½ inch arbors, weighing about 600, 800, 1,000, and 1,500 lbs. each. The smallest are to carry small wheels to 18 inches in diameter: the largest, wheels to 6 feet in diameter.

Large emery wheels are more economical than small ones, when they can be used at all; and with substantial and heavy machines like the above, manufacturers will soon see that their interest lies in using emery wheels in place of grindstones, and large emery wheels in place of small ones.

A patent for this machine has been applied for through the Scientific American Patent Agency. For further particulars, address the Union Stone Company, 38 Hawley street, Boston, Mass.

THE PENGUIN FAMILY.

The penguins are a family of web-footed birds, with very imperfectly developed wings; they are found in immense numbers around the rocky coasts of the Southern Pacific Ocean, and on the shores of the Cape of Good Hope. The king penguin is one of the best known of the species; it belongs to the genus *aptenodytes*, being particularized by zoölogists as *aptenodytes Pennantii*. The bill is slender and curved at the points, which are acute; and the wings are very small, resembling fins in appearance, and having no quill feathers or plumes; they are therefore unfit for purposes of flight. Indeed, it would appear that this singular tribe is entirely unfitted for traveling through the air, as the bones have no air chambers, are filled with marrow, and are very heavy. The feet are very far back, and the posterior surface touches the ground as the bird walks.

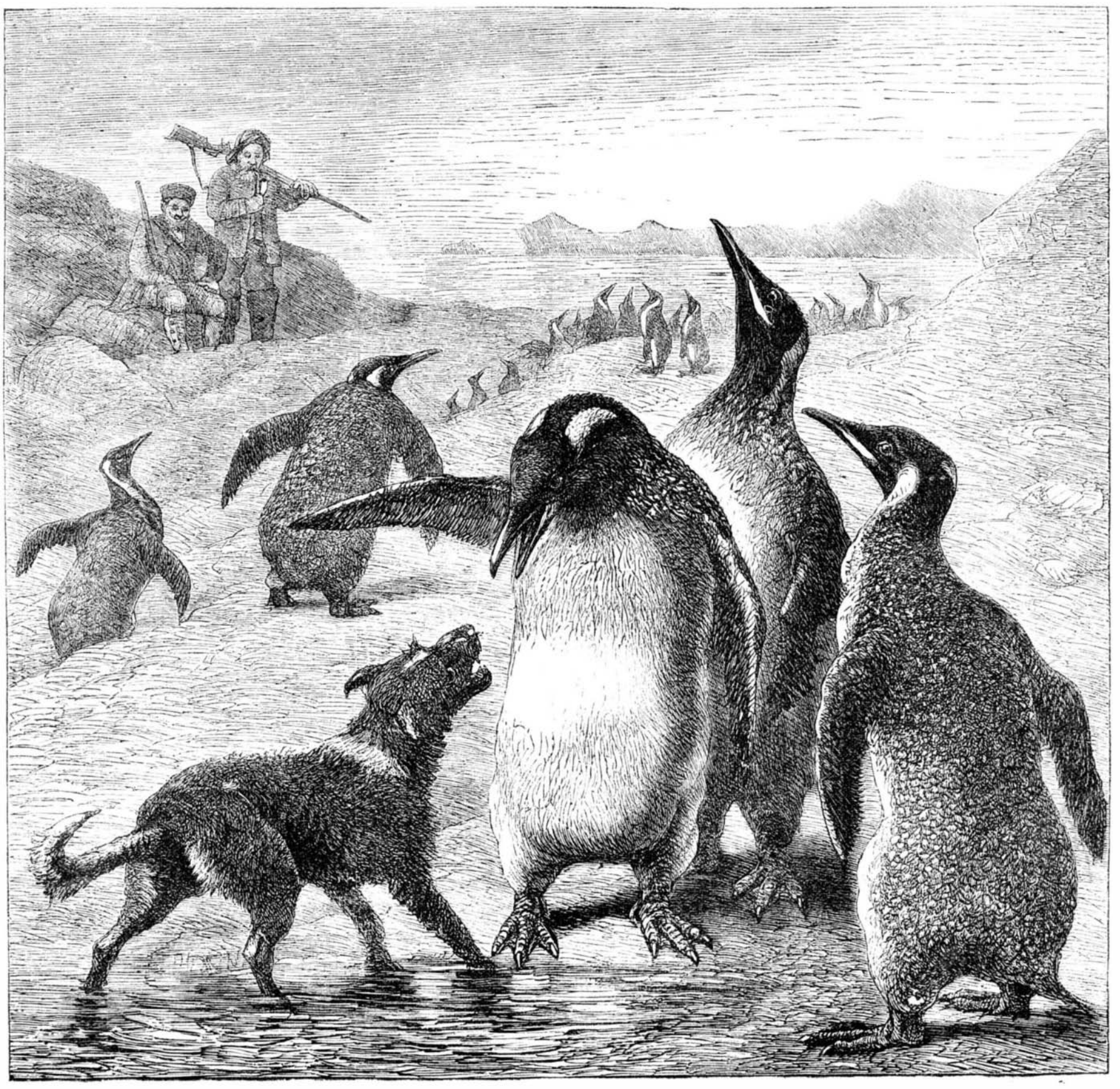
Great numbers of these birds were found on Kerguelen's Island, a rocky island in the Indian Ocean, by the expedition which traveled thither to observe the transit of Venus, which took place on December 9, 1874. At a distance they appear as white stationary bodies; but on approaching, they are seen to be waddling along with an indescribably ludicrous gait, which is made still more absurd by the turned heads, as the birds look back distrustfully at their pursuers. As the body sways from side to side, the bird looks like an animated coat with empty, swinging sleeves. When attacked at close quarters, as shown in our engraving (which represents a scene on the coast of Kerguelen's Island), the penguins will use their beaks with considerable effect; but their sense of helplessness is strong, and they soon take to running away. Being clumsy and slow in walking, they frequently fall on their breasts, and move their wings (as if they were in the water) like fins. When congregated in numbers, they will unite to resist an attack, and will form a close phalanx. They are frequently killed for the sake of their skins, which are covered on the breast with fine, close feathers of remarkable softness, and are used, in place of furs, for wearing apparel. They are generally slaughtered by being knocked on the head with a club; but sometimes they are taken alive with a lasso thrown over the head. If they can reach the water, they can usually elude the pursuer, as they swim and dive with astonishing rapidity, remaining under water for some time and reappearing at a considerable distance from the place of first immersion.

The king penguin, the largest of the species, has an orange tinted breast, which becomes white near the abdomen. The back is grayish black, and the front and back are separated by a sharply definitive line of a steel gray color. They stand about 2 feet 9 inches high, and their plumpness gives them considerable weight. Their diet causes the flesh to be rank and fishy, but it is eaten by the natives of some countries.

Professor Osborne Reynolds as a Water Wheel Inventor.

Professor Osborne Reynolds, M. A., of Owen's College, England, has taken an English patent for what he supposes to be a new invention in turbine water wheels, which is engraved and described in a recent number of the *English Mechanic*. Briefly, the Professor's invention consists in using a double turbine, or two turbines in combination instead of one, the water passing necessarily through both.

The invention also consists in the use of what he terms curved movable vanes or plates, by which the water openings are enlarged or diminished, according to the head of water or the speed required. From the description given, it seems evident that Professor Osborne has simply reproduced some of the inventions already patented in this country. For example, the American patents of A. P. Conant, April 10, 1866, for turbine, of C. Shaw, February 15, 1870, and others that might be cited, appear to fully anticipate Professor Osborne.



KING PENGUINS ATTACKED BY A DOG.