THE PROPELLER BONE.—A CONTRIBUTION TO SCIENCE.

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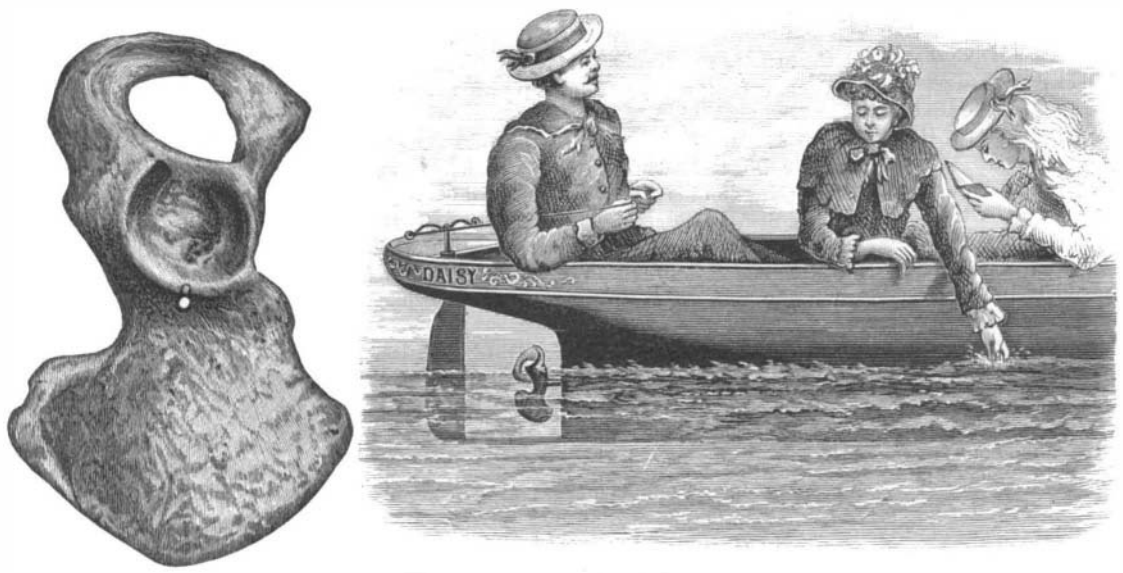
"The thing that hath been, is that which shall be;
And that which is done is that which shall be done;
And there is no new thing under the sun."

The innominate can now be appropriately called the propeller bone.

The early anatomists, in giving names to the various bones composing the human skeleton, called many by such as their analogy presented to existing objects; in doing so they permitted their fancies to be very much enlarged and exaggerated. So many points of dissimilarities will have to be allowed if we would fully concur with them. In giving names to the bones of the pelvis, with their natural articulations and soft parts, without much stress of imagination they could appropriately speak of them collectively as forming a true *basin*. Nor was much difficulty perhaps presented when they disarticulated the osseous structure that formed that cavity, and gave to its separate bones their appropriate names. On each side of this basin the bones soon unite, and in the adult have so blended as to present a very large bone, whose irregular shape and roughened outlines gave them no clew or resemblance to any known form or object, hence they called it the innominate or nameless bone.

This large, ugly bone, which up to the present time no one has seen fit to grant shape or form, is a facsimile of a *marine screw propeller*, with angles, shape, and performances similar to those used for propelling sea going vessels. To demonstrate this proposition, a pleasure boat fifteen feet long was fitted up and driven by one of these bones very satisfactorily.

In conducting the experiment all that was changed was to place a piece of flat bone so as to span the obturator foramen, which only replaces the obturator membrane that exists normally. While this is not necessary, it prevents the water from flowing through the aperture as well as to counterbalance the ilium end, which is more dense in structure and presents so many processes. Another similarity may be noticed: one innominate with its opposite fellow presents a right and left hand screw, which according to nautical nomenclature are known as twin propellers, and are both modes of marine propulsion. In pursuing this analogy still further, independent of the striking resemblance in form that exists, there is still a strong coincidence as to the use the propeller and the innominate bone bear as auxiliaries to motion. Both act only as accessories; the former, acted upon by an internal force generated within the vessel, sends her through a yielding medium; the latter, though a little more passive, performs the same subordinate office in the human economy by affording attachments for levers and appliances which are so regulated and adapted by a perfection of machinery and force as to give to man his remarkable power of locomotion. In this investigation two changes were made in the arrangement of this bone that differ from it as presented in the body. One, as stated, was to close the hole with solid material; the other consisted in reversing the surfaces, making the internal the driving one. This was done because if placed vertically to the end of the boat the large depressions and holes are hid, and present to the eye a smooth and more graceful appearance. These abnormal changes did not give as good results as when conformity to the natural condition was followed. Why this was a fact no theory was available to explain until it was solved by reference to the SCIENTIFIC AMERICAN, August 30, 1879, which describes Deane's patent propeller, whose blades are represented having depressions with holes through them. He claims these holes are necessary to partially overcome the vacuums created by all other propellers, and gives to his its peculiar merit and advantage. Strange to say, these depressions with holes are found upon this bone, and are arranged upon just such a scientific principle as claimed in his invention.



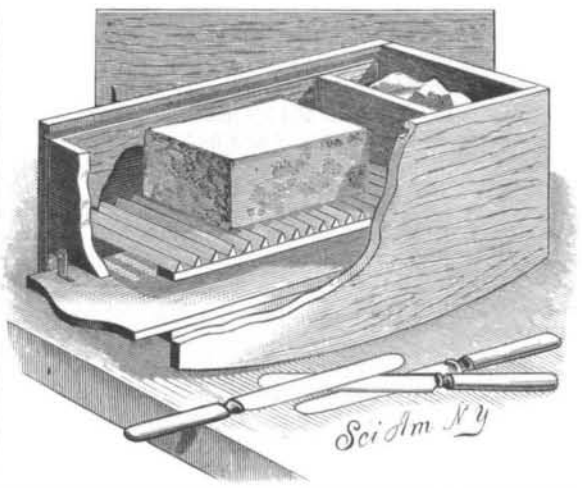
THE PROPELLER BONE.

From the above it is apparent that this nameless bone has double claims for restitution and justice; and when future anatomists are planning their modern works, the old innominate should be no longer slighted, but by its *push* gain for itself either an appropriate name or be granted a more definite shape. As a summary, we have only added another link to the strong chain of evidence that speaks so potently to prove that many of our modern inventions, and especially those that are to be the most important factors for man's development and advancement, are but duplicates and principles fully illustrated and operative in a being that the Good Book admonishes us to investigate if we would know for ourselves.

THE awards at the Foreign Exhibition in Boston were distributed January 1. They consisted of 386 medals and diplomas to exhibitors, exclusive of a number of such marks of distinction to various United States and foreign officials. It is stated that there have been in the neighborhood of 300,000 visitors to the exhibition.

COMBINED KNIFE BRICK BOX AND GRINDER.

The box for holding the knife brick has a grater bottom, of any approved kind, on which the brick rests, so as to be ready to be ground whenever the dust is wanted for scouring knives or other objects. The brick may be shifted along the grater by hand for grinding off the dust when wanted, but the box is arranged on rockers, so that it may be tilted and the brick made to slide backward and forward on the grater, thus making a much neater and cleaner device than if the brick were moved by hand. The scouring board is arranged to slide in the box under the grater, so as to receive the dust. At one end of the box is a cell for holding the cork, chamois skin, or other rubber to be used in



WOOD'S COMBINED KNIFE BRICK BOX AND GRINDER.

the scouring process. The engraving represents the construction so clearly that further description is unnecessary.

This invention has been patented by Mr. John F. Wood, of 4 Spring Street, Boston, Mass.

A Cheap Ice Box.

Make or buy two boxes, one of which shall be two or three inches smaller all around than the other. Line the smaller one with sheet zinc, soldered at the seams and turned over and nailed to the edge of the box. Make a hole in the middle of the bottom, and put a zinc or lead pipe through the bottom and solder it well to the zinc lining; this must be long enough to project below the outer box when they are put together. A block may be nailed to the inside of the bottom of the outer box, and a hole bored to correspond with the place of the tube in the inner box.

Fill the bottom of the large or outer box with pulverized charcoal or charcoal and sawdust, deep enough to allow the top of the inner box to sit low enough for a cover under the cover of the outer box. Put the inner box in place, and fill all around between the boxes with the pulverized charcoal; place some strips of wood between the two boxes on a level with the top of the inner box, put a zinc-lined cover upon the inner box and a tight wood cover upon the outer. If the lead pipe at the bottom is long enough, bend it up for a siphon, to prevent air from circulating and to allow the water from the melted ice to escape.

Deafness Caused by Pressure on the Ears.

Narrowing of the external auditory canal from cracks in the cartilaginous portion is a recognized cause of deafness, apart from the liability to which it gives rise of the retention and accumulation of cerumen. Dr. Moure has seen this narrowing caused by the pressure of a handkerchief worn over the head and tied closely under the chin, which forms the head-dress worn by the peasant women in some districts. Deafness produced in the same way is not uncommon in nuns who wear the *cornette* pressing tightly against the pavilion of the ear. The treatment of this condition consists in gradual dilatation by means of laminaria tents.—*Lyon Medical.*

A Substitute for Emery.

Some improvements in the manufacture of artificial stone and of a substance which can, with advantage, take the place of emery have been produced by Mr. B. Hess, of Bayreuth. The artificial stone manufactured according to this invention consists of serpentine (or kindred minerals), soapstone, feldspar, mica, quartz, and fireclay, or some of these variously combined according to the purpose for which the stone is intended. These substances, says the *Building News*, are pulverized, mixed, and moistened, and after having been pressed into the required forms are burned at a white heat. Thus treated, they acquire a hardness that will permit them to be used as fireproof building materials, as pavement, as mill and grind stones, as floor plates, as wall panelings, as crucibles, smelting pots, stone vessels, mill rollers, and the like.

The minerals serpentine or soapstone as chief ingredient, feldspar as binding material, and also mica, quartz, and clay are first ground more or less fine in the usual manner. For building purposes, paving stones, pavement plates, and mill stones, the patentee usually employs about 40 parts of serpentine or soapstone, 10 parts of feldspar, and 2 parts of mica, which are well mixed and moistened with so much water that the mass remains conglomerate if compressed by hand. The mass is then pressed or stamped in moulds made of iron, wood, or other suitable material, to the desired forms in such manner that when the forms are taken apart the mass will be so consistent that it will retain its form unchanged. The stones, plates, vessels, or other objects are afterward well, but slowly, dried in an appropriate manner under the influence of a gradually increasing temperature, and are finally burned in a strong white heat.

In manufacturing plates for tables, floor plates, wainscoting, and similar objects, six parts of fireclay may be added to the mixture of minerals specified above. For grind stones the patentee preferably employs a mixture of 40 parts of serpentine ground fine and burned beforehand, 10 parts of feldspar, and 5 parts of quartz sand. For crucibles, smelting pots, or other stone vessels, he prefers to employ about 40 parts of soapstone, 10 parts of feldspar, and 6 parts of fire clay, which are ground fine, well mixed while dry, and then water is added until the mass can be manipulated on the potter's wheel, as is the case with porcelain. The crucibles or smelting pots thus formed are gradually but thoroughly dried and then burnt in a very intense white heat, whereby an unusually fire proof, perfectly acid proof, vessel is obtained, specially adapted, for instance, for melting gum by varnish makers, etc., no alteration in the color of the mass to be melted taking place. The same mixture which is used for crucibles will also serve for manufacturing mill rollers, which, after drying, should be carefully turned and finished on the wheel or a suitable lathe. For manufacturing a substitute for emery, the serpentine or a kindred mineral is ground as fine as required, then burned at a strong white heat, and after cooling is sifted or bolted, and finally sorted. This substitute for emery thus produced is, according to the patentee, eminently superior in hardness, sharpness, and durability to the best emery, and is admirably suited for grinding, polishing, and cleaning metals. The proportions stated above are well suited for the purposes for which they are prescribed, but they may be modified without departure from the essential characteristics of the invention. Serpentine consists of about equal parts of silica and magnesia with water; soapstone or steatite invariably has a larger proportion of silica, nearly 2 to 1 of magnesia, and less water than serpentine; but if either can be made into a substitute for emery at a commercial price, it will appear strange that the discovery has not been made before, though that clearly consists in calcining the mineral, a feature which forms the substance of the invention.

Lithograph Stones.

Mr. Stuart, of Edinburgh, proposes to strengthen stones, which have thus been weakened, by applying to them a backing of granolithic. This material, it appears, when placed in contact with a roughened surface, adheres with such tenacity as to form, with the stone it is attached to, one solid mass. Its capacity for sustaining pressure is known to be great, and if additional strength should be required, bars of steel can easily be introduced while the material is in a soft condition. Treated in this way, a lithographic stone of an inch in thickness becomes thoroughly serviceable, and will, it is said, continue so till worn almost to a film. Blocks of the ordinary thickness thus become capable of furnishing the material for two or three printing stones, while slabs that would otherwise be too thin for use can be turned to profitable account.