

polypites, giving to the ring which they occupy on the lower surface of the float, a dark yellowish tint from the colour of the yellow cells, found along the rudimentary proboscis of the *Medusæ* buds, as well as along the chymiferous tubes. The large marginal tentacles are of a bluish tint, their knobs of a darker colour. The smaller polypites occupy on the lower surface that portion of the mantle which covers the ring formed by the so-called white plate of Kölliker round the base of the single central polypite. Sometimes these polypites are seated in cavities of the white plate, and sometimes projections of this latter will be found to extend far up into the lower part of the small polypites. This white or pinkish plate consists of an irregularly anastomosing system of needles and spurs, or of bars of greater or smaller size, leaving a series of narrow openings for the passage of the tubules. Prof. A. Agassiz suggests the alliance of *Porpita* with the *Hydrocorallinæ*, basing this suggestion on the presence of the white plate, and of its peculiar structure, which reminds him of the porous structure of the corallum of *Sporadopora*, *Allopora*, *Millepora*, and although, of course, not having the regular horizontal floors of the latter, yet possessing, like these genera, large pits, the whole mass being riddled with passages and openings, forming the spongy mass of the white plate. If this homology be correct, it shows far-reaching affinities in the *Porpitiidæ*. The Plates, twelve in number, give a great number of anatomical details, and there are full-sized and coloured representations of the two species described.

HUGHES' NEW MAGNETIC BALANCE

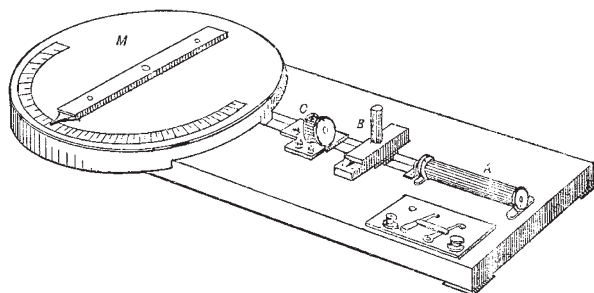
A NEW magnetic balance has been described before the Royal Society by Prof. D. E. Hughes, F.R.S., which he has devised in the course of carrying out his researches on the differences between different kinds of iron and steel. The instrument is thus described in the *Proceedings of the Royal Society* :—

"It consists of a delicate silk-fibre-suspended magnetic needle, 5 cms. in length, its pointer resting near an index having a single fine black line or mark for its zero, the movement of the needle on the other side of zero being limited to 5 mms. by means of two ivory stops or projections. When the north end of the needle and its index zero are north, the needle rests at its index zero, but the slightest external influence, such as a piece of iron 1 mm. in diameter 10 cms. distant, deflects the needle to the right or left according to the polarity of its magnetism, and with a force proportional to its power. If we place on the opposite side of the needle at the same distance a wire possessing similar polarity and force, the two are equal, and the needle returns to zero; and if we know the magnetic value required to produce a balance we know the value of both. In order to balance any wire or piece of iron placed in a position east and west, a magnetic compensator is used, consisting of a powerful bar magnet free to revolve upon a central pivot placed at a distance of 30 or more cms. so as to be able to obtain delicate observations. This turns upon an index, the degrees of which are marked for equal degrees of magnetic action upon the needle. A coil of insulated wire, through which a feeble electric current is passing, magnetises the piece of iron under observation, but, as the coil itself would act upon the needle, this is balanced by an equal and opposing coil on the opposite side, and we are thus enabled to observe the magnetism due to the iron alone. A reversing key, resistance coils, and a Daniell cell are required."

The general design of the instrument, as shown in a somewhat crude form when first exhibited, is given in the figure, where A is the magnetising coil within which the sample of iron or steel wire to be tested is placed, B the suspended needle, C the compensating coil, and M the

magnet used as a compensator, having a scale beneath it divided into quarter degrees.

The idea of employing a magnet as compensator in a magnetic balance is not new, this disposition having been used by Prof. von Feilitzsch in 1856 in his researches on the magnetising influence of the current. In von Feilitzsch's balance, however, the compensating magnet



was placed end-on to the needle, and its directive action was diminished at will, not by turning it round on its centre, but by shifting it to a greater distance along a linear scale below it. The form now given by Hughes to the balance is one of so great compactness and convenience that it will probably prove a most acceptable addition to the resources of the physical laboratory.

WINTER LIFE AT SPITZBERGEN

THE following is an extract of a report by one of the *personnel* of the Swedish Meteorological Expedition of the wintering at Spitzbergen :—

One of the deepest fjords of Spitzbergen is the Ice Fjord on the west coast. On a map of the islands it will be seen, some fifteen miles from the mouth, to split into two smaller ones. The promontory which divides the two is Cape Thordsten. It is formed of slate rocks some 2000 feet in height, from which in some places precipices descend perpendicularly into the sea, and in others valleys slope down into the plain. The latter is furrowed by streamlets and deep ravines, while the rocks around are the breeding places of every sea bird of the Arctic fauna, as, for instance, the seagull, the auk, the rodge, and the *Uria grylle*. In the plain reindeers graze, and on the mountains ptarmigans and snow-sparrows breed. The plain is covered with grass, rather strongly interspersed with moss, but here are to be found many plants and flowers, such as *Polymonium pulchellum*, *Dryas orthopetula*, the white and red saxifrage, the Spitzbergen poppy, and the common buttercup.

In the plain close to the mountain the huts are situated which now bear the name of "Smith's Observatory," from the munificent equipper of the expedition. The buildings were erected here some ten years ago by the Ice Fjord Company, which was formed for the utilisation of guano of the coprolite deposits found in the adjacent mountains.

On July 21, 1882, the vessels of the expedition arrived here, but it was at that period doubtful whether we should establish our station here, as the mountains around contain a large quantity of hyperite, a mineral which it was feared would affect the magnetical instruments. We found on landing a line of metals up the hill, with a gradient of 45°, a winch being fixed at the other end for its working. Here was also, still intact, the little dwelling house on four poles, alongside which we found the material required for the building of a new house as stated in works on Spitzbergen. Near to the house is a cross raised with the following inscription: *Her tviler Stövet af 15 Mænd, som døde her i Foraaret 1873. Fred med deres Stöv.* This is the epitaph to the Norwegian fishermen who sadly perished here ten years ago.