simply natural selection; but Mr. Wallace regards this view as erroneous, and to him the very frequent superiority of the male bird or insect in brightness of colour, even when the general coloration is the same in both sexes, seems to be due primarily to the greater vigour and activity and the higher vitality of the male. He reminds us that the colours of an animal usually fade during disease or weakness, while robust vigour and health add to their intensity. This intensity is most developed in the male during the breeding season. It is also very general in those cases in which the male is smaller than the female. This greater intensity of coloration in the male would be further developed by the combats of the males for the possession of the females. Increased vigour, acting thus on the epidermal system, would soon produce further distribution of colour, and even new tints and markings. Nay, even the remarkable display by so many male birds of their peculiar beauties of colour and plumage may be thus accounted for; for at the pairing season these birds are in a state of the greatest energy. Even unornamental birds, at such a season, flutter and spread out their wings and erect their head-crests or their tail-feathers; and there would be a progressive development of these ornaments in all dominant races, and if those portions of the plumage which were originally erected under the influence of anger or fear became largely-developed and brightly-coloured, the actual display under the influence of jealousy or sexual excitement would be quite intelligible; the males would soon find what plumes were most effective, and would endeavour to excel their rivals.

It will thus be seen that Mr. Wallace's theory of colour might almost be called a molecular one. The causes of colour are due to molecular or chemical changes of certain substances, and on the action on these of light, heat, and moisture. They can be produced or intensified by processes of development, and this as the surface bearing these colours is extended or diminished and as there is a surplus of vital energy; or they may be, as in plants, acted on by some, as yet, unknown local action dependent on the soil or on vegetation.

Doubtless this theory will give rise to much controversy; and in the course of this, no doubt, many important facts will be elucidated. Thus, Mr. Wallace reminds us that, in the case of those female birds with brighter plumage than the males, the females are larger, more pugnacious, and show more of vital energy.

One portion of tropical nature Mr. Wallace has overlooked in the volume—that which spreads its brilliant colouring over the white rocks that lie under the sea. Crowds of lovely forms are here; and they are worthy of a chronicle. E. PERCEVAL WRIGHT

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Extinct and Recent Irish Mammals

PROF. BOYD DAWKINS, in his interesting "Preliminary Treatise on the Relation of the Pleistocene Mammals to those now living in Europe," just published by the Palæontographical Society, places the Irish elk (*Cervus megaceros*) among the prehistoric mammals in consequence of its presence "*in the peat bogs* of England, Scotland, and Ireland;" indeed, in a former monograph on the British Pleistocene Mammals, by Messrs. Dawkins and Sandford, and published by the same Society, it is stated that "the *C. megaceros, C. tarandus, C. elaphus*, and *Bos longifrons*, have been found associated *in peat in Ireland*."

Now although remains of the red deer and short-horned ox are not uncommon in Irish turbaries, there is not a single authenticated instance of either the Irish elk or reindeer having been discovered *in peat*. This observation as regards the Irish elk was made by Prof. Owen long since (1846) in the "British Fossil Mammals," and a wide field of observation confirms my impression of its truth as far as Ireland is concerned. Moreover, there is no reliable evidence to show that man and the Irish elk, reindeer, mammoth, horse, and bear, were contemporaneous in this island.

With reference to the smaller Irish mammals referred to in Mr. Dawkins's treatise. On the authority of Wilde and others it is stated that both the *Martes foina* and *M. abietum* are natives. The former, at best a doubtful British species, has never been authenticated in Ireland, but the latter is not uncommon.

Again, neither the weazel (*M. vulgaris*) or polecat (*M. putorius*) have any claims to be included in the Irish fauna. As to *Felis catus* there is much doubt, the individuals being in all probability domesticated cats run wild.

In regard to the rodents given in Mr. Dawkins's list as Irish, neither the *Arvicola agrestis* nor the *Arvicola amphibius* have been identified; but on the other hand, the *house mouse* (*M. musculus*), reported absent, is unfortunately too plentiful in many districts.

The red deer is still a native of the mountains around the Killarney Lakes, and until recently a few lingered in the wilds of Connaught, but certainly it is not just now on the Tipperary Mountains, though the fallow deer does occur there. Of the shrews, none of which are given in Mr. Dawkins's list, the pigmy (*S. pygmæus*) is the only species hitherto identified in Ireland. I mention these facts, having lately bestowed much attention to the study of Irish mammals. A. LEITH ADAMS

Royal College of Science, Dublin, May 25

Hints to Workers with the Microscope

I AM now and have been for the last fortnight enjoying a treat which everyone who possesses a microscope, a slip of glass to lay on the stage, and a piece of thin microscopic glass with a little cotton wool, can enjoy for the price of 1*s*. Mr. Bolton, formerly of Stourbridge and now of 17, Ann Street, Birmingham, sends me weekly supplies of rotifers, and has just sent me *Rhinops vitræa* and *Hydatina senta* in great profusion. With ordinary *compressoria* and live boxes these are troublesome to see, as they are very lively rovers. To those who may not know the *Midland Naturalist* or the *Microscopic Transactions*, I recommend a particular method which I recently sent to those publications.—Take a plane glass slide, on it drop one or more of the rotifers in a drop of water about half-an-inch in diameter, and draw off the surplus water, if any, carefully with the empty pipette. Then fray out a very very small portion of cotton wool (I always use a watchmaker's glass in the eye to do all such operations) until it is much extended, and spread out and lay this on the drop. Upon that lay the thin microscopic glass, the thinner the better, and then set up the capillary attraction by gently touching it with a needle. Draw off any superfluous water from the edges with the pocket-handkerchief and you will have a little wilderness of wool in which the rotifer is restrained in its movements, protected from pressure, and within reach of very high powers. The amount of wool depends on the size of the rotifer. Hydatina requires more depth than rhinops. The same plan answers equally well for all roving animals. The poduridæ in particular when placed in deep glass cells are easily seen by this apparatus, and it saves many a weary and vexatious five minutes with the compressorium, which, even at the best, requires with living animals extraordinary patience. The rotifers are easily found and secured with the pipette and a watchmaker's glass in the eye after a very little practice. Mr. Bolton's studio is of the greatest value to naturalists and cannot be too well known, for to those who have not time to look for specimens it is a great privilege to be able to purchase them.

Fort Hall, Bridlington Quay, Yorks, May 25 F. A. BEDWELL