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 intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Adjustable X-Ray Tubes.

THE writer has discovered a method of adjustment for X-ray tubes, somewhat different to those he has previously described, which possesses distinct practical advantages.

The arrangement is as shown in the illustration, and its essential feature consists in mounting the kathode upon a sliding support, so that it can be moved axially to a very small extent in and out of a tubular neck, blown on one end of a glass bulb. When arranged in this manner, the exact position of the kathode is found to have an enormous influence upon the penetrative value of the X-rays produced. With a suitable and constant degree of exhaustion, if the kathode is placed as shown in full lines in Fig. 1, X-rays of very high penetrative value are produced, while the small movement of about $\frac{1}{3}$ inch required to place it in the position indicated by the dotted lines, will suffice to reduce the penetrative value of the rays almost to nothing. Between these two extremes every grade of penetrative value is readily obtained by simply altering the position of the kathode between its limits of travel. If the tube be used in a horizontal position, this can easily be done by merely tapping it at one end or the other, without removing it from its support, and the anti-kathode being a fixture, the point of origin of the X-rays remains always in the same position. In this manner, with a single tube, and without alteration to the vacuum, X-rays of any desired penetrative value can readily be obtained, while

FIG. 1.

at the same time it is possible to compensate for the uncontrollable variations in vacuum that are found to occur in practice, and thus to maintain the penetrative value of the rays at any desired degree.

The effect is evidently due to changes in the electrical resistance of the tube, which, as measured by the alternative spark in air, is much highest when the kathode is in the position shown in full lines, *i.e.* that which gives rays of the greatest penetration, and appears to be closely connected with the proximity of the kathode to the glass, which is greatest in the position just mentioned.

This factor is evidently so important that it much more than neutralises the effect of the alteration to the distance between kathode and anti-kathode, which, as the writer has previously shown, has the result of increasing the penetrative value of the rays, and also the resistance of the tube, the nearer these two electrodes are together.

In order to obviate the overheating of the anti-kathode, which is a considerable source of trouble in all X-ray tubes when much electrical power is employed, the writer finds it convenient to mount the ordinary small disc of platinum upon a considerably larger and thicker disc of aluminium, say about 1 inch in diameter and $\frac{1}{25}$ inch in thickness, the platinum being tightly wedged and riveted in a shallow circular depression turned out of one face of the aluminium disc. Owing to the considerable radiating surface of the aluminium, and its considerable mass, this arrangement prevents the platinum from attaining an excessive temperature. In addition, the platinum having only one surface exposed, the tubes do not blacken so quickly.

May 17.

A. A. C. SWINTON.

NO. 1439, VOL. 56]

Boomerangs without Twist.

IN your issue of May 13 (p. 46), a writer mentions some Australasian boomerangs as thrown *not to return* (if I have rightly understood him). I had not heard of these before, but in British India at least one race, the Kolis of Northern Gujarat, have the like. These are invariably of "fish" section, varying in weight, curve, and material; but the commonest and most efficient sort is of "Babul" wood (*Acacia arabica*), with the natural curve of the heart of the wood, something like that of an old-fashioned genuine Turkish sabre, rather a "knee" than any regular geometric curve.

They are used with great effect on ground-game; much less, of course, on birds. In one case an old and feeble man, threatened by a swordsman, cut the assailant's shins across with his boomerang at about ten paces, and *brought him down*. Before the astonished thief could rise, the now unarmed old man had disarmed and literally taken him captive.

I tried the case myself, gave the swordsman two years, and the boomerang man much honour. Certain people called *Maravars*, in the south of the Madras Presidency, are said to have similar boomerangs; but I have not seen them.

Many Indian races throw straight sticks at game habitually, and even in a city riot the thrown sticks are often more dangerous than those in hand (bar iron-bound clubs). But their practice is not scientific, like boomerang-throwing.

W. F. SINCLAIR.

102 Cheyne Walk, Chelsea, S.W., May 14.

Scorpion carrying Flower.

ONE evening last February, while sitting in the verandah of my house at Aden, my attention was drawn to an object advancing across the floor, which seemed to be some peculiar leaf

insect or phasma. On looking at it closer I saw it to be a scorpion (identified by Mr. Pocock from my description as *Parabuthus liosoma*), which was holding over its back by one claw a large blossom of *Poinciana regia*, known in Aden as the white-gold mohur tree. Its tail, curled over its back, further assisted in retaining the flower in position. The nearest tree from which it could have obtained it was at least 30 feet away, and to bring it the scorpion must have carried it over a low stone parapet and up two or three steps, so that intention seems to be proved. What that intention was it is hard to define. Hardly for concealment, for the size of the flower made it more conspicuous; besides, it was night. If it was the lamp-light it wanted to avoid, it is necessary to assume that, finding the light too strong, it went back to get the flower. It could hardly be as food, for scorpions are not known to live on vegetable substances; nor, as far as I know, do they construct nests. I regret that I did not allow the creature to reach its destination, and so ascertain its intention; but, unfortunately, I gave in to my first impulse and crushed it. My wife suggested that perhaps it was going to a wedding, but this explanation is more poetical than scientific.

Some of your readers may be able to throw a little light on this curious instance; but Mr. Pocock, of the British Museum, to whom I related the above, said he had never heard of a similar case.

A. NEWNHAM.

The Utility of Specific Characters.

MR. COCKERELL asks whether it is possible to explain right-handedness, the dextral or sinistral coil of snail-shells, and similar features as having any utility to the species, and he then speaks of