

apart from the ridges, or ridge substance, any more than the holes of which Pat's classic stockings consisted can be considered without reference to the slender remains of the fabric in which they occur.

Dr. Edmond Locard, the writer of the article, "La Poroscopie," alluding to certain landmarks in finger-print patterns (*puntos caracteristicos* they have been called), adduces in one of his illustrations some *ilots* of a single dot, each containing the opening of a single sweat-pore. The effect when printed is that of a more or less regularly shaped O or ring. Of course, if the smoked-glass method were used, what I have called the negative effect would be produced, and the pore would show up as a black dot on a white ground. In such a case as that illustrated the value of such a coincidence would be seen at once, but the value belongs much more to the system of ridges than to that of the pores. A dozen such pores might easily be found to coincide in two patterns having no real relation to each other by way of personality. I should not expect, however, after considerable experience of finger-print patterns, to find three volcanic or coral islets such as are depicted in Fig. 3 coinciding in any but two prints from the same person. But these volcanic islands are not mere pore openings. It is the sharp definition of the ridge element in them that gives character for identification.

It is difficult to conceive of many cases in actual practice where simple coincidence of pores could be made convincing to a jury. Such cases are presented with a magnification of forty-five diameters. But Dr. Locard says:—"Un jury, que trente ou quarante points caractéristiques homologues auront laissé indifférent, sera frappé par la concordance de forme, de position, et de nombre de quelques centaines de pores trouvés identiques sur les deux empreintes comparées." If the illustrations are from the exhibits in the criminal cases quoted, as one would be led to infer, the jury would seem to have been aided very greatly with outlines filled in by official pens, by which the rough places have been made smooth, and coincidences which would not strike any but police officials seeking a conviction, have been made vivid, if not always quite convincing. All this is, I trust, now quite foreign to English criminal procedure.

It is in cases where fewer than some twelve of what an English detective would in the witness-box call "characteristics" are to be found that the additional scrutiny of the pores might be useful. I agree with Dr. Locard that they remain locally fixed in position, but I have mentioned in "Dactylography" (Twentieth Century Science Series), which Dr. Locard does not seem to have read, that, their physiological activity being very variable, their shapes are constantly altering. They may be nearly closed one moment, and quite patent the next, a useful fact which makes it hopeless to forge finger-print signatures effectively with rubber stamps. This variability is most vividly shown in the illustrations to the very article now referred to, and where a finger-print pattern is doubled the pores always agree in position but rarely in shape or size. HENRY FAULDS.

36 Lichfield Street, Hanley, Stoke-on-Trent,  
August 13.

#### Calanus—a Further Record.

ON getting back to Tobermory on Saturday, we found the plankton to be in marked contrast to its condition four weeks ago (see NATURE, p. 504). The vast swarm of Calanids has gone, and there are now no signs of mackerel feeding in the bay. In fact, the change has been noticeable for some days in the seas outside, and we have not been getting lately the large plankton catches that were usual in the latter

half of July. On July 14 a haul of the large surface tow-net, in the open sea off Ardnamurchan, gave such a huge catch of Calanus (about 1000 c.c.) that we promptly took a second similar haul, and had it cooked as a sort of potted "shrimp" confection for tea (sampled by ten persons, including the crew, who were much interested to try this new edible "fish"); while on August 11 a haul of the same net, taken at the same spot, gave only a small catch of some 15 c.c., containing very few Calanids, along with the usual scanty summer zoo-plankton. I have not yet seen any statistics of the mackerel fishery, but should not be surprised if this proves to be an exceptionally good year in this neighbourhood, especially in July.

I have only just received NATURE for the last few weeks, and am glad to read Mr. G. E. Bullen's further remarks (p. 531) upon swarms of Calanids and the fisheries. His excellent work—along with that of Dr. Allen—on the connection between mackerel and Calanus and sunshine in the English Channel, some years ago, is valued as the type of observational and statistical work that is required for the investigation of many fishery problems. W. A. HERDMAN.

S.Y. Runa, off Island of Eigg, August 12.

#### The Structure of X-Radiation.

IN a letter which appeared in NATURE of JUNE 19 we described some effects obtained with various metals used as obstacles to X-radiation, which showed that the bands and haloes produced on X-ray plates up to distances of 450 cm. were neither dependent on crystalline structure (other than metallic) nor should probably be termed "diffraction" effects in the strict sense.

Further investigation, in which crystals have been entirely discarded, has led us to believe that some part of these effects at least must be referred to the structure of the primary beam.

In one of our early trials arranged to study the disposition of the spots from a thin lamina of mica, normal to the beam and covering a quarter of an inch aperture, we were surprised to find that spots were not present, but instead the photo plate, exposed at a distance of 50 cm., was entirely covered by dark parallel bands about half a centimetre in breadth and normal to a sharply defined bright cross. In later experiments without mica, and using cast-iron and other screens, both with and without apertures, a system of crossed similar bands has appeared, and a great number of trials have confirmed the result that particular metals (brass, lead, cast- and wrought-iron, &c., of various thicknesses up to 1 cm.) cannot be held responsible for these phenomena, which have even appeared when no other obstacle than a thick sheet of plate-glass has been interposed. A platinised-nickel antikathode has generally been used and 0.5 to 1 milliampere was kept constant through the bulb.

At it appears from Mr. Keene's letter in NATURE of August 14 he has used only thin sheets of metal *with apertures*, we can understand that he has obtained somewhat dissimilar effects from ours obtained without any aperture in the screen. Also with super-cooled glass plates there can scarcely be any question of crystalline structure. We have substituted special rapid plates of various makers and changed all the non-essential conditions many times. When photo plates are placed one behind the other at distances of 15 cm. (up to 100 cm.) from the source, these bands have invariably shown most clearly on the plates farthest from it. This certainly would seem to suggest masking, by secondary radiation, of an effect which properly belongs to the primary or "hardest" portion of the rays. W. F. D. CHAMBERS.

I. G. RANKIN.

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