

appear compressed and elongated by pressure of neighbouring cells, with nuclei ovoid in shape, homogeneous and intensely stainable. The disposition *en tourbillon* of the cells can be clearly appreciated when the section corresponds to a zone in which only a part of an islet seems to be affected, the nodules being especially shown up by their nuclear density from the tissue that is normal (Fig. 3).

Griffiths and Young¹² have demonstrated an increase in the insulin content of the pancreas of rats treated with oestrogenic substances. We think that the modifications briefly described above represent the histological basis of functional hyperactivity dependent upon excessive pituitary stimulation.

E. VAZQUEZ-LOPEZ.

Imperial Cancer Research Fund,
Burtonhole Lane,
The Ridgeway,
Mill Hill,
London, N.W.7.
Oct. 4.

¹ Anselmino, K. J., Herold, L., and Hoffmann, F., *Klin. Wschr.*, **12**, 1245-1247 (1933).

² Anselmino, K. J., Herold, L., and Hoffmann, F., *Z. deutsch. ges. exp. Med.*, **97**, 329-335 (1935).

³ Bierring, K., *Bull. Hist. Tech. micr.*, **11**, 297-301 (1934).

⁴ Chrzanowski, B., and Grzyckis, S. J., *Klin. Wschr.*, **16**, 488-490 (1937).

⁵ Fichera, G., *Pathologica*, **30**, 286-290 (1938).

⁶ Elmer, A. W., Gledosz, B., and Scheps, M., *C.R. Soc. Biol.*, **124**, 823-826 (1937).

⁷ Santo, E., *Z. deutsch. ges. exp. Med.*, **102**, 390-406 (1938).

⁸ Wolf, R., *C.R. Soc. Biol.*, **131**, 315-317 (1939).

⁹ Richardson, R. C., and Young, F. G., *J. Physiol.*, **91**, 352-364 (1937).

¹⁰ Cramer, W., and Horning, E. S., *Lancet*, **1**, 247-249 (1936).

¹¹ Ludford, R. J., and Cramer, W., *Proc. Roy. Soc., B*, **101**, 16-24 (1927).

¹² Griffiths, M., and Young, F. G., *NATURE*, **146**, 266-267 (1940).

the range of biological currents of the heart or the brain.

In the case of a D.C. magnet the production of electric currents within the tissues depends on the blood flow with the pulse. With A.C. magnets the changing of the direction of the field adds to the production of these currents. With high-frequency currents the magnetic field alternates so quickly, that the movement of a stream of liquid is no longer needed, and electric currents are produced also in capillary and lymphatic areas, even in non-vascularized tissues.

While with D.C. magnets electric currents of a certain direction can be produced, electric currents produced by A.C. and high-frequency magnetic fields cannot be directed, but originate more or less in the form of eddy currents. But the possibility of localizing diathermy and ultradiathermy makes it possible to concentrate the production of these electric currents in circumscribed areas or organs.

It seems certain that these magnetically produced electric currents play a part in the effects of diathermy treatments. They probably account for the immediate relief of pain in some cases, long before any measurable rise of temperature in the tissue occurs. The production of electric currents inside the tissue differs from the ordinary external application of electricity exactly in the same way as the production of heat in the tissue by diathermy differs from externally applied heat.

Biological and clinical investigations along these lines have been started.

K. F. NAGELSCHMIDT.

Edgecombe,
The Avenue,
Bury New Road,
Manchester.
Sept. 30.

Biological Effects of High-frequency and Magnetic Fields

SINCE diathermy first became a generally recognized method of treatment and especially after short-wave therapy was universally accepted, the controversy as to whether the heat effects alone account for the biological effects has not ceased. No other physical effect but heat has, however, up to the present been proved to exist while high-frequency currents are applied.

In the course of more than a year's work with an 'Inductotherm' short-wave diathermy apparatus it has become, by clinical observation, obvious to me that the magnetic field produced as well as the electric field was of some effect. An investigation of the effect of magnetic fields of different kind showed that small differences of potential and actual electric currents were produced inside biological objects very much after the principle of a dynamo, the biological object acting as the rotor.

The application of a concentrated magnetic field between the narrowly tapered poles of a D.C. magnet produces in a glass tube of 0.5 cm. diameter electrical potential differences if a salt solution or blood is pumped through it. With a D.C. magnet of 5,000 gauss and a velocity of flow of a salt solution of 60 cm. per second, potential differences of about 2 millivolt could be produced. This is well within

The Existing Coelacanth Fish, Latimeria

IN my review of Prof. J. L. B. Smith's account of the existing Coelacanth fish, *Latimeria* (*NATURE*, July 13, 1940, p. 53), I remarked that the fins appeared to agree with those of the fossil Coelacanths in all respects except the considerable extension backwards of the membrane of the anterior dorsal fin.

According to the annual report of the South African Museum for 1939, the dried fish has been prepared anew with great skill by the Museum's taxidermist, Mr. James Drury, and it is now evident that such an extension of the anterior dorsal was deceptive. All the fins of *Latimeria*, therefore, are of the normal Coelacanth type. As shown by the photograph published in the report, Mr. Drury has made an excellent restored cast of the fish, of which it will be possible to distribute copies. There seems to be only one small feature open to criticism—the bifurcation of the rays in the hinder portion of the pectoral fin. All the fin rays hitherto observed in Coelacanths are simple rods, and those preserved in the specimen of *Latimeria* are likewise without any distal sub-division.

A. SMITH WOODWARD.

Hill Place,
Haywards Heath,
Sussex.