tumours in man can be inoculated only into the same individual who developed the original tumour.

PHYSIOLOGY.

UNDER THE CHARGE OF

T. H. MILROY, M.D., F.R.S.E.,
PROFESSOR OF PHYSIOLOGY, QUEEN'S COLLEGE, BELFAST.

Hot Air Baths.

This mode of treatment is by no means a new one, but until comparatively recently the methods of applying it were in many respects faulty, and as a result the opinions expressed by those who have tried it have been most conflicting. In the collection of papers issuing from the Physiological Institute Helsingfors, and dedicated to Professor Hammarsten, there is one by von Willebrand on this subject (Skandin. Arch. f. Physiol., Leipzig, Bd. xc. S. 123). His physiological experiments were mainly carried out with the view of determining the effects of exposure of limited portions of the body to dry air at high temperatures. The effects on blood pressure, pulse frequency, respirations, and body temperature were studied on dogs under morphia, atropin, and chloroform. It is by no means certain that the very high temperatures (140° to 160° C.) stated by the author are correct, because other investigators have shown that the thermometer in the apparatus employed is usually placed where the temperature reaches a much higher level than in the neighbourhood of the part being treated. However, when the thermometer registered temperatures from 130° to 160° (probably only about 100° to 120° in reality), the carotid blood pressure rose about 23 to 55 mm. Hg. The greatest rise was not observed at the highest temperature, but there seemed to be a mean optimum temperature (about 130°) below and above which the pressure fell.

The pulse frequency and the general body temperature were practically unaffected, but, as has always been observed, the number of respirations was increased. In very few cases were bad effects, such as signs of cardiac weakness, to be observed. The writer's clinical observations on patients were made on a variety of cases, those being selected which, it seemed likely, might prove amenable to such a mode of treatment, e.g., various forms of arthritis, muscular rheumatism, tendo vaginitis, oedema after venous thrombosis, etc. Beneficial effects were most marked in cases of subacute rheumatism, less distinct in chronic, and absent in gonorrheal cases.

In the other cases mentioned good results were also obtained. According to the writer, these good results were most probably due to the following:—(a) Increased rate of absorption of fluid in the hyperemic area. (b) Gradual removal of pathological deposits either from the phagocytic action of the increased number of leucocytes in the area, or from the setting free of autolytic enzymes under conditions of
increased cellular activity. (c) Local analgesic effects. (d) Facilitation of regenerative processes.

Pupillary Light Reflexes.

It has been usually held that light falling upon practically any part of the retina will produce in the normal individual reflex contraction of the pupil. As Hess points out (Arch. f. Augenh., Wiesb., 1907, Bd. lviii. S. 2 and 3), this has been by no means definitely proved. As a rule, sufficient care has not been taken to accurately localise the stimulated zone, the influence of dispersed light not being taken into account. Hess has most carefully investigated the subject anew, and finds that there is only a small area in the central portion of the retina which on stimulation produces reflex contraction of the sphincter pupillae. Stimulation of the more peripheral parts, when accurately defined, produces no effect. Hess gives the diameter of this small central zone as less than 4 mm. One can readily understand the importance of Hess’ work in its relation to various pathological conditions, e.g., pupil reactions in hemiopia. The outer parts of the cones are probably the end organs which are stimulated. Hess, in a later paper in the same journal, points out that there are many objections to the general view that the rods, as carriers of the visual purple, are specially employed in the case of adaptation for dim light. The retinae of day-birds are very poor in rods, and yet in dim light such birds possess a very fine power of accurate localisation, certainly as fine as the human eye with all its wealth in rods and visual purple. From experiments on albino rabbits, the pigment seems to play no important part in the dark adaptation of the eye. With regard to the limits of the visible spectrum in birds, it appears that, compared to man, there is no shortening of the red end, but a very marked absence of response to the rays of short wave length which are quite visible to us. The outer parts of the cones seem to be the end organs stimulated by monochromatic light in the case of hens and pigeons. Nagel, from some rather quaint experiments on the colour sense in dogs (Centralbl. f. Physiol., Leipzig u. Wien, 1907, Bd. xxi. S. 7), states that with practice they may be taught to recognise the colour quality of an object. This is evidently especially true for reds (including orange). The colour sense is by no means acute, being somewhat similar to that of a child of 2½ years.

Sham Feeding and Gastric Secretion.

Helene Katznelson (Arch. f. Physiol., Leipzig, 1907, Bd. cxviii. S. 327) made some observations in the case of a girl, age 18 years, with oesophageal and gastric fistulae. The experiments were of the same nature as those described by Pawlow in the case of the dog. The most diverse gustatory and olfactory stimuli were effective in calling forth a free secretion of gastric juice or in increasing the flow which had been started by another stimulus. It seemingly did not matter whether the substances had a pleasant or unpleasant taste or odour so long as the stimulus was a powerful one.
The latent period was extremely short, while with such substances as bread, milk, and meat where the gustatory and olfactory stimuli were not so intense, the latent period was the usual prolonged one of five minutes. Purely mechanical stimulation of the mouth produced no effect on gastric secretion. The writer found that the ordinary food-stuffs affected the amount and character of the juice in the same way as was found to be the case in the dog.