ately twice that in mature animals. The amount of heparin in young animals was surprisingly large. After 50 days of age the heparin concentration had diminished by 75 per cent. Thereafter, the level of all acid mucopolysaccharides in skin appeared to remain fairly constant.

In order to demonstrate unequivocally that the mucopolysaccharide present in the 'heparin' fraction was indeed heparin, 56 gm. of acetone-dried rat skin were extracted and the mucopolysaccharides separated as above. Approximately 9 mgm. of mucopolysaccharide were isolated from the 'heparin' fraction. The material was subjected to chromatography on 'Dowex 1 × 2', chloride resin, using increasing concentration of sodium chloride for elution. Heparin was removed with 2 *N* sodium chloride. Analyses showed hexosamine, uronic acid (by the carbazole reaction[8]) and ester sulphate to be present in a molar ratio of 1·0 : 1·6 : 2·0, respectively. The amino-sugar, determined by the method of Stoffyn and Jeanloz[9], was glucosamine. The substance had a specific rotation of + 90° and an anticoagulant activity identical to that of a commercial preparation of beef heparin (General Biochemicals, Inc.) with 136 units per mgm.

In view of the large number of mast cells in rat skin, the presence of heparin in this tissue is not surprising. Monkhouse *et al.*[10] reported heparin activity in extracts of rat skin but no chemical analyses were published, and their preparations contained a low order of anticoagulant activity.

Whether the heparin present in skin is entirely intracellular cannot be ascertained from the present data. It is conceivable that some heparin is secreted into the extracellular space during the life-cycle of the mast cell. This conjecture is consistent with a recent observation by R. S. Geiger and A. Dorfman (unpublished results) that granules are extruded from mast cells during culture of a mouse mastocytoma.

The finding of large amounts of heparin in skin and its relative decrease with age has many physiological implications. The role of heparin in lipæmia-clearing and blood coagulation suggests that changes in tissue concentration may influence these phenomena. It is possible that a local decrease in heparin affects deposition of fibrin or lipids.

A more detailed report of the methods and results will be published elsewhere.

This investigation was aided by grants from the United States Public Health Service (No. *H*-311) and the Chicago Heart Association.

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A Possible Function of Planktonic Photophores

A NUMBER of unrelated groups of planktonic animals have developed the curious arrangement of upwardly directed eyes combined with downwardly directed photophores; this has been described and discussed by Hardy[1], who has suggested a number of possible explanations.

Could this singular arrangement sometimes constitute a mechanism whereby the members of a vertically migrating species can keep together even when the most important factor, light from the surface, is brusquely interrupted ?

Consider a gregarious species, mainly light-controlled, which occupies depths between 600 m. and 800 m. on a fine day, and between 200 m. and 400 m. by night. At midday after a sunny morning the animals at 600 m. will be comparatively well illuminated, but those at 800 m. may be almost at the threshold of perception of daylight. Now suppose that, as must not infrequently happen, the Sun is suddenly obscured by thick cloud for the rest of the day. The highest animals will start to swim up towards the levels of light-intensity that suit them best; the deeper animals, however, cannot at once do so, for they are now suddenly unable to perceive any daylight at all. Their upward-pointing eyes, however, may be able to perceive the diminution, in size and intensity, of the pattern of the photophores of their relatives above them, now rapidly climbing. Since they are gregarious, this situation might urge them in their turn to climb, so as to keep station with their fellows.

In this way, I suggest, it may be possible for a species to undertake light-controlled vertical migrations, even though the light may be acting on many of the individuals only at second hand.

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PLANT PHYSIOLOGY

Interaction of Growth Inhibitor and a Natural Germination Stimulator in the Dormancy of *Fraxinus excelsior* L.

DORMANCY of seeds of the genus *Fraxinus* has been variously ascribed to immaturity of the embryo[1], mechanical resistance of the seed coats[2,3], and the presence of growth-inhibiting substances within the pericarp[3] and in the mucilage surrounding the embryo[4]. A recent study of dormancy in the fruits of *F. excelsior* L. has shown that these explanations are inadequate.

When the fruit of *F. excelsior* is shed from the tree, the embryo is small, but morphologically complete. Before germination occurs, the embryo grows by cell division and cell extension from little more than half, to the full length of the seed. This occurs most rapidly in moist storage at warm temperatures (18–20° C.) and is greatly retarded by the presence of the pericarp, which apparently restricts the oxygen