

per litre). Liquid and solid media were both used and cultures were maintained either in continuous darkness or in 12 hr. of light a day. Measurements of growth and of morphological and histological developments are recorded and illustrated. Among the abnormal developments observed, especially at the higher concentrations of auxin, were the formation of tumorous and callus tissues, disorganizations of normal tissue differentiation, and formation of adventitious roots, but no induction of buds is reported. Attention is directed to the different reactivities of different regions of the embryo according to concentration of auxin and cultural conditions. The three auxins tested had generally comparable effects on the growth and differentiation of embryos, namely: complete inhibition of growth; inhibition in meristematic tissues, including the procambium, but extensive activation in mature tissues; activation in meristematic tissues, including the formation of adventitious roots; and regulation of growth-rate, these being in the order of decreasing auxin concentration. The results obtained are discussed fully in relation to contemporary views on auxin action.

Control of Dollar Spot Disease (*Sclerotinia homoeocarpa*)

TRIAL work with a new fungicide, cadmium chloride/urea, has recently been completed by the Sports Turf Research Institute (*Sports Turf Bulletin*, 41, April-June, 1958) for the control of dollar spot disease. Outstanding results were obtained from seven (monthly) applications of the fungicide on the bowling green of the Briton Ferry Steel Co., Ltd., in Glamorgan. The green (originally of sea-marsh origin) still contains a proportion of the original sea-side bents and fescues with an admixture of annual meadow grass. Although in good condition each summer, the fescue has been progressively weakened by attacks of dollar spot disease. Work with the cadmium chloride/urea fungicide started in April 1957. Further applications at the same rate were made in May, June, July, August, September and October. The fungicide spray was combined with the regular application of fertilizer—three evenly spaced applications of fertilizers containing a high proportion of readily available nitrogen. When examined in November, the turf was found to be free from visible signs of the dollar spot disease. There were no signs of other diseases such as *Fusarium* patch and *Corticium*. The same fungicide was effective in controlling dollar spot disease on bowling greens in Yorkshire and Lancashire. On other greens good control of the disease has been obtained, but where an insufficient number of applications has been made, the disease has re-appeared later.

Colour Changes in Teleosts

THE control of colour changes in the lower vertebrates, including the teleostean fishes, has received a considerable amount of attention, and various different and even conflicting theories have been put forward to explain it. In a recent study, Priscilla Rasquin (*Bull. Amer. Mus. Nat. Hist.*, 115; 1958) has approached the problem from a different aspect and, instead of studying one or two species in detail, has surveyed a wider field. The memoir is divided into two separate parts. Part 1 is the study of the histomorphology of the pineal complex of thirty-

three species of teleosts, including freshwater and marine forms. In general, the extent of the specialization of the pineal organ (epiphysis) is related to the degree of transparency of the overlying tissues and it exhibits a wide range of variation. Experiments on pinealectomy in *Astyanax* show no appreciable effect upon pigmentation, and while there is some evidence of secretory activity in the pineal organ in some species there is none of an endocrine function. Part 2 is a study of the effects of the injection of adrenalin in thirty-five different species and also of intermedin and a series of mammalian pituitary hormones. With adrenalin three groups can be distinguished in which there is: (1) a concentration of granules in the melanophores; (2) a concentration in the internal melanophores only; (3) no effect. In all species there was a response in the lipophores to adrenalin but in one group the response was dispersion and in the other concentration of the pigment granules. With intermedin all species showed dispersion in the lipophores, but the melanin granules in the chromatophores in four species showed concentration and others gave no reaction. These observations show the need for further investigation, for the responses in one species need not be duplicated in another, and it is dangerous to argue from the particular to the general. Some of the photomicrographs in the ten plates are not good, and most would be more useful if labelled.

Continuous-writing Streak Camera

AN improved streak camera for the study of fast self-luminous events has been developed by Beckman and Whitley. It is intended primarily for the study of explosions, shock tube, spark discharge and similar phenomena. Standard 35-mm. film, arranged for daylight loading and unloading, is used. The image is swept on to this film by a rotating triangular mirror driven by a high-speed turbine. Several types of these are available—the fastest one, ranging from 200 to 5,500 revolutions per second, is driven by helium gas. This arrangement produces a maximum writing rate of approximately 8 mm./ μ sec.; and a maximum time resolution, using a 0.004-in. wide slit image and film having a resolution of 75 lines per mm., of 2.5×10^{-8} . The camera has a control equipment which includes an events-per-unit-time meter for accurate measurement of the mirror speed to provide a determination of writing-rate; mirror-speed adjustments; and controls for the capping shutter and the explosive-actuated blast shutter, used to prevent rewriting in the case of events of long duration.

Cometary Spectra

In a recent paper entitled "Molecules in the Solar System" (*Cont. Dominion Astrophys. Obs., Victoria, B.C.*, No. 51), A. McKellar discusses gaseous molecules in comets and in planetary atmospheres, including that of the Earth. The spectra of comets are characterized by the occurrence of emission bands of molecules superposed on a background of reflected solar radiation. The spectra of comets are generally solar when their heliocentric distances exceed 3 astronomical units, but emission bands appear as the comet approaches the Sun. Generally speaking, heliocentric distance has proved the most useful parameter in describing the behaviour of the molecular emissions.