that of the other vessels, readily demonstrates the extent of the ductus tissue. This histochemical differentiation is another distinctive property of the ductus, which is already known to differ in structure and function from other large arteries.

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Rearing of *Simulium damnosum* Theobald (Diptera, Simuliidae) in the Laboratory

ALTHOUGH adults of *S. damnosum* have been reared from larvæ, rearing from eggs does not appear to have been recorded. Hartley[1], however, was successful in rearing *S. venustum* adults from eggs. In view of the importance of *S. damnosum* as the main vector of onchocerciasis in Ghana and elsewhere, and the recommendation by the World Health Organization Expert Committee on Onchocerciasis[2] that the rearing of *Simulium* in captivity should be studied, it was felt that attempts should be made, when opportunity occurred, to rear *S. damnosum* in the laboratory. This communication describes the apparatus and method by which *S. damnosum* adults have been successfully reared from eggs.

The apparatus consisted of a trough of corrugated asbestos roofing material, inclined at an angle of 20°, in an aquarium tank containing three gallons of river water which was circulated via the trough by means of a water-circulating pump delivering approximately 60 gall. per hr. at an estimated velocity of 3·8 ft. per sec. Aeration was produced by maintaining the water-level 2 in. below the lower end of the trough to form a miniature waterfall, the inflow pipe being placed near this aerated water. Further aeration was obtained by piercing the polythene outflow pipe 1 ft. from the outlet with a suitably inclined M.R.C. type transfusion needle causing a stream of air to be drawn in.

In June (9 a.m.) a mass of some 10,000 eggs, apparently laid by many females in the manner described by Crisp[3] and Muirhead-Thomson[4], on submerged grasses, was obtained from Senchi rapids in the River Volta. 3 hr. later, by which time some eggs were already hatching, the grasses were placed in the trough and the water circulated. The eggs continued to hatch during the following day, comparing favourably with the hatching time of 36 hr. observed by Crisp[3]. Wanson and Henrard[5] state that in Leopoldville the eggs hatch within 4 hr. of deposition.

As the larvæ grew, the river water became clearer owing to the filtering out of plankton and suspended matter: at increasingly frequent intervals ½ gallon of water was removed from the tank and replaced by river water which had been concentrated approximately five hundred times by filtering through a fine plankton net. After 7 days many of the larger larvæ migrated up to 15 in. into the outflow pipe. Possible reasons for this migration were increased current velocity or greater depth of water (9 mm.).

Eight pupæ were formed, all in the outflow pipe, 14–17 days from hatching, the pupal stage lasting 2–3 days. Seven adults emerged successfully into a cage placed over the apparatus; but only three, all males, were collected, the remainder escaping. In field conditions in the Northern Territories of Ghana at a temperature of approximately 25° C., Crisp[3] found that the larval stage lasted 10–13 days and the pupal stage 4–5 days. In this experiment the temperature ranged from 21·1° C. to 31·1° C. with an average of 25·8° C.

On the nineteenth day all larvæ were found to be detached and dead; the *p*H of the water in the tank was now found to be 7·3 compared with 6·9 for fresh river water. It is thought that the accumulation of larval excreta in the tank was sufficient to account for the death of the colony.

Note added in proof. In a further rearing experiment in which the river water was changed completely every two days, the minimum length of the egg to adult cycle for males and females was 16 and 20 days respectively: the length of the larval stage varied from 14 to 40 days.

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Relation of Colchicine to Chromosome Breakage

COLCHICINE affects the mitotic spindle in a variety of ways[1–3]. It has also been claimed that colchicine will induce chromosome breaks[4,5]; but this effect has never been confirmed. Chromosome breaks have been found after treatment with old solutions of colchicine, but this action can be attributed to bacterial toxins, which are formed as the solution ages, and not to the colchicine itself[6].

To test for the ability of colchicine to induce chromosome breaks in *Vicia faba*, I have grown beans in aerated distilled water in a cabinet at 20° C. When lateral roots had formed, the beans were kept in a 0·05 per cent aqueous solution of colchicine for 3 hr. After 24–30 hr., 60 diploid nuclei and 60 of the induced tetraploid nuclei were examined at metaphase. No chromosome breaks were seen in either diploid or tetraploid cells. Colchicine as such does not appear, therefore, to have a direct effect in inducing chromosome breaks. This confirms the results of Gaulden and Carlson[2].

In addition to its independent or direct effects, colchicine has been thought to alter the sensitivity of cells to X-rays, that is, to exert an indirect effect. Thus combined treatments have been said to result in: (1) a reduced frequency of 'chromatid aberrations'[7]; (2) an increased frequency of 'reunions and restitutions' among broken ends[8]; (3) an enhanced inhibition of root-tip growth[9]; (4) an increased mutation-rate[10].

In order to obtain evidence of an indirect effect of colchicine on the production of chromosome breaks by X-rays, I kept beans in 0·05 per cent colchicine for 3 hr. and then irradiated them. Other beans