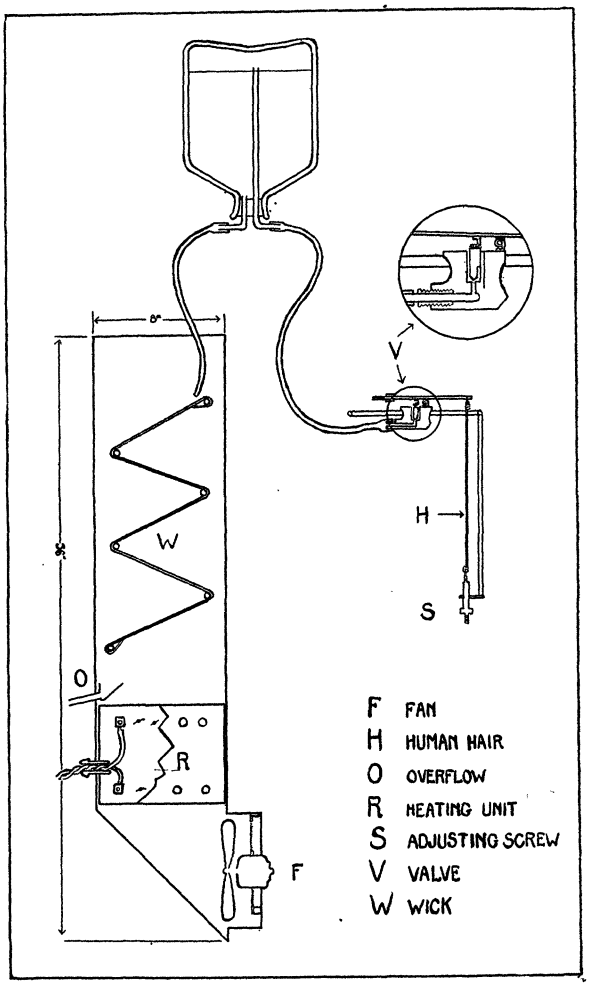
A HEATING-HUMIDIFYING DEVICE FOR INCUBATORS

THE apparatus described herein is believed to fill a long-felt want in biological laboratories for a cheap and efficient heating and humidifying unit for incubators. The original unit cost approximately $12.00, including the six-inch fan. It has been in constant use for several months in an incubator of forty cubic feet capacity used for insect rearing work and has given complete satisfaction.

The chief features of the apparatus may be summed up as follows: (1) Heating, humidifying and circulation of the air in the incubator are all taken care of by one compact unit. (2) Any reasonable temperature above that of the surrounding atmosphere may be automatically maintained as accurately as the thermoregulator used will permit. (3) Any relative humidity above that of the surrounding atmosphere up to 95 per cent. may be maintained automatically, and independent of variations outside. (4) The fan in the unit maintains sufficient circulation in the incubator to insure uniform conditions throughout. (5) The maintenance and regulation of the humidity is independent of the heating device and may be used to maintain a constant humidity while the temperature is allowed to vary.

The unit, as illustrated in the diagram, consists of a metal box about three feet long and eight inches square, and open at both ends. The bottom opening is at the side and is made round to accommodate the blades of a six-inch electric fan, F. This fan operates constantly at a reduced speed. The heating unit, R, consists of a coil of resistance wire wound to three hundred watts and surrounded on the sides by an asbestos casing. This is connected to the electric service through an electric thermoregulator, which may be placed in any suitable place in the incubator. Above this and supported on brass rods is a zig-zag porous cotton wick, W. Water drips on the top of this wick from a tube connected to an inverted bottle which rests on the top of the incubator or in any convenient place which is slightly above the unit. The water thus fed to the wick is carried off to the incubator by evaporation in the air current produced by the fan. Water can only leave the bottle as air is admitted. The admittance of air is governed by the valve, V. This is made from old carbureter parts and is opened and closed by the contraction and expansion of strands of human hair, H, the same as used to activate the hand on a standard hygrograph. Adjustment is made by the screw, S, and the percentage humidity determined by testing with a hygrograph or wet and dry bulb thermometers. O is a small overflow to take care of any surplus water which may come down, caused by the valve opening wide when the door of the incubator is kept open unduly long and the air in the incubator has become dry.



A more complete description of the apparatus with photographs will be published later along with hygrothermograph charts indicating the capabilities of the instrument. To date the tests it has been possible to give the apparatus have been somewhat limited, due to the necessity of keeping it in constant use for a particular type of work. It has, however, demonstrated its ability to maintain an even humidity of over 90 per cent. when the room humidity was as low as 40 per cent., both with and without constant heat.

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