the adrenal cortex which is already responding to the stress of cold.

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An Efficient Apparatus for the Redistillation of Water for Biological Purposes. (20214)

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The preparation of water of sufficient purity for critical biological work, and in sufficient quantity, is a perennial problem in biological research laboratories. It is generally agreed that the output of metallic stills such as those of block tin is likely to prove unsatisfactory. Quartz is expensive and the units ordinarily available have a low output and require constant attention. Pyrex glass has proved a satisfactory substitute for most work and there are many types of Pyrex stills available which give excellent results as to quality of product. Most of them, however, are far from automatic and are generally likewise of rather low output. The type of all-Pyrex still described here has been developed after considerable experience. and has been used successfully in preparing nutrients for tissue-culture studies in a number of laboratories. It is relatively inexpensive, and once set up requires a minimum of attention.

The outfit as we use it (Fig. 1) consists of two duplicate units, each made up of 4 items, 3 of which are standard. The units are 1) a standard stove-type heater, usually a 2-burner electric stove with 3-heat burners; 2) two standard flat-bottomed 2-liter distilling flasks (Fig. 2. 3) each with 34/45 ST female joint at the top and side-arm having a 24/40 ST male joint; 3) two standard 22 cm Friedrich condensers. each with a 24/40 ST female connection at the top and standard drip point below, and 4) two constant-level inlet tubes. The inlet tubes* consist of 5 pieces (Fig. 1, 2, 3): first a) there is a feed unit consisting of a 34/45 ST male joint attached above to a 30 mm tubulation and below to one of 20 mm diameter. The lower tubulation is about 200 mm long and when inserted into the flask reaches down to the level at which the water level is to be maintained. The upper tubulation extends upward about 130 mm. Into this is fused concentrically a 10 mm tube 490 mm long so placed as to extend down 440 mm from the point of fusion, that is to about 10 mm from the bottom of the flask, and extending upward 50 mm where it ends in the socket half of an 18/9 ball joint. This forms an inlet for the water supply. From the side of the 30 mm tube a side tubulation 10 mm in diameter is brought out 40 mm, then up parallel to the concentric tube, likewise ending in an 18/9 socket joint. Connecting to this is (b) an "L" shaped 10 mm tube with ball joint at the bottom, a 280 mm vertical arm carrying a 120 mm standard Soxhlet trap, and a 130 mm horizontal arm with socket joint. Parallel to this, and connecting with the concentric tube is (c) a second "L" similar, but lacking the trap. The first "L" connects to a 100 by 100 mm "L" with a single ball joint (d) while the other connects to a 100 by 530 mm "L" with ball joint on the short arm (e). These last are inserted into a No. 12 2-hole rubber stopper. The stopper is

* Built for us by Macalaster Bicknell of Cambridge, Mass.

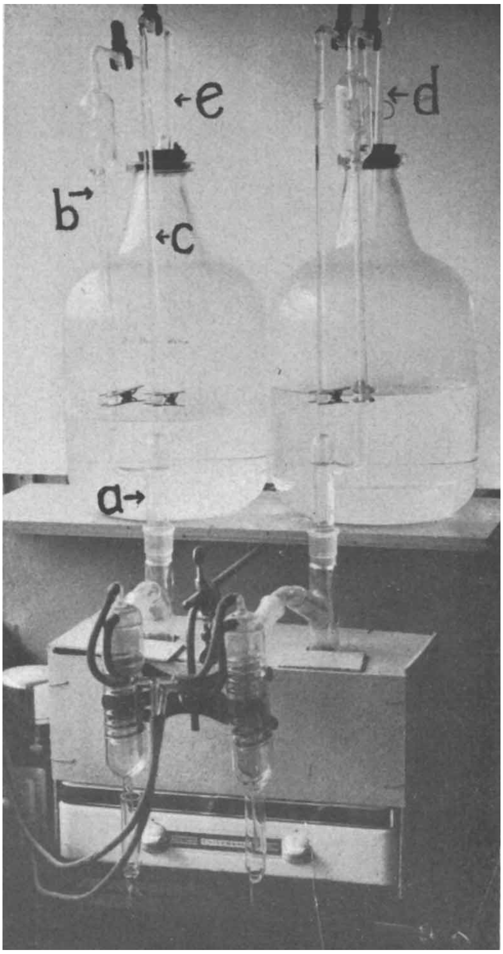

FIG. 1.

placed in a 20-liter Pyrex carboy supported at the proper height either behind or beside the distilling flask. The two flasks with their inlet tubes are set up on the 2-burner stove and the distilling flasks are surrounded by an insulating box built of asbestos board (we have found this heating unit more efficient and much less expensive than Glascol heaters). The inlet tubes are connected to the two carboys.

With the supply carboys filled with single distilled water from a tin still all joints are checked for tightness. There must be no leaks. The ball-joint between the trap (b) and the short armed "L" (d) is broken and a length of rubber hose loosely inserted toward the carboy. Blowing into the rubber hose will then force water into the other tube (c-e) and start it siphoning into the flask. The hose is then quickly removed and the ball joint closed and clamped. Water will siphon into the flask until the level rises to the end of the outer concentric tube, when the air inlet into the supply carboy is cut off and water flow ceases. As the water boils off it is maintained at this level, fresh water siphoning in whenever the water falls below the level of the tube. The trap in (b) serves to prevent excessive amounts of hot water flowing back through the air inlet with the recurrent changes in temperature of the boiling flask.

With this set up the still can be left un-

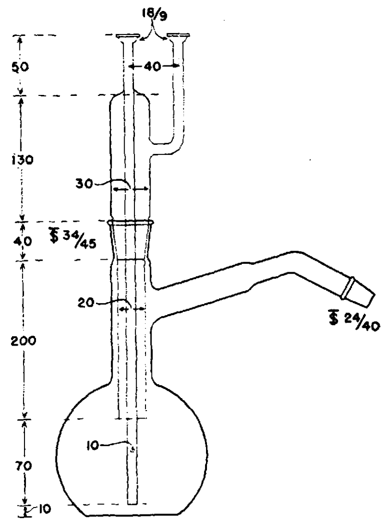

FIG. 2.

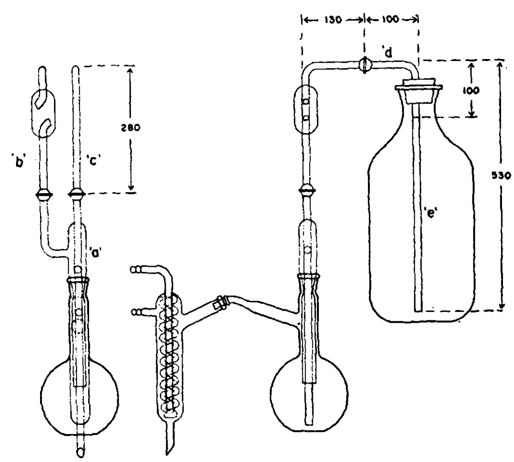

FIG. 3.

attended for long periods. If kept running continuously the supply carboys will have to be refilled about twice a week. Care must be taken they do *not* become empty, which would result in the flasks running dry and breaking, but this is the only matter that requires any attention. If the carboys can be filled directly from a central distilled water line without moving them, this can be done through a third inlet in the stoppers. In this case a stop-cock should be inserted in tube (c) so that flow of water into the distilling flask can be stopped while re-filling. Without this precaution water will continue to flow so long as the air-lock is broken in filling and the distilling flask may become flooded.

The total cost of the outfit is approximately \$150. For small laboratories a single unit costing about \$75 would be quite satisfactory. Some further saving can be made on the heating unit.

Two such units will distill about a liter of water an hour giving a product of high purity. With the heater, distilling flasks, tubes and supply carboys they occupy a space of 25 x 30 x 37 inches above the table.

Various refinements of this apparatus are possible. We know of at least 13 of these double units now in use. The design has proved highly satisfactory and is therefore presented with the hope that it may prove useful to others.

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Incidence of Epidermal Methylcholanthrene Tumors in Mice After Administration of Cortisone.*† (20215)

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There appears to be some relationship between the skin irritation produced by application of carcinogenic hydrocarbons and the development of the ensuing tumors(1). There is also an undoubted effect of cortisone administration in reducing the inflammatory reaction of the skin in response to the application of various irritating chemicals(2-5). It seemed of interest, therefore, to study the possible effects of cortisone administration upon both the inflammatory response and the production of epidermal tumors in the skin of mice being subjected to applications of methylcholanthrene.

Methods. Albino mice of a Swiss strain, the same age and approximately the same weight, were used. *Group I-A.* 65 mice received applications of a 0.6% (weight/volume) solution of methylcholanthrene in benzene, applied to the clipped skin of the interscapular area 3 times weekly for 6 consecutive weeks; and each received, subcutaneously, concomitant daily injections of 0.5 mg of cortisone acetate in 0.25 cc of physiologic‡ saline solution. *Group I-B* (Control). 47 mice received paintings of methylcholanthrene-benzene as in Group I-A, but daily injections of 0.25 cc of physiologic saline without cortisone. *Group II-A.* 65 mice received applications of a solution of 0.3% methylcholanthrene in carbowax 1500 (weight for weight, solution complete at 41°C) 3 times weekly for 6 consecutive weeks and concomitant daily injections of cortisone acetate, as in Exp. I-A. *Group II-B* (Control). 47 mice received applications of methylcholanthrene in carbowax as in II-A, but concomitant daily injections of physiologic saline instead of the cortisone suspension, as in Group I-B. *Tumor formation* was regarded as established when a circum-

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