proximately 24 hr. Attempts to demonstrate the substrate for this respiration were unsuccessful.

The homogenate was combined with 1.2 volumes of 0.01 M phosphate buffer (pH 7.5) and 0.2 volumes of 0.04 M $MgSO_4$, filtered to remove fat globules, and aged at 37° C for 24–29 hr. Very little respiration was shown by 2.4 ml of this preparation with the addition of 0.2 ml of 0.0028 M adenosine-5-phosphoric acid. The addition of glucose as a substrate did not change the respiration. The addition to this mixture of 0.2 mM of oleic acid, linoleic acid, palmitic acid, stearic acid, tripalmitin, tristearin, butyric acid, acetic acid, or 3.3 mg Antarox B-290[3] (a water-soluble castor oil polyethylene glycol ester) approximately doubled the oxygen uptake. Malic and fumaric acids, members of the tricarboxylic acid cycle, also doubled the oxygen uptake. Acids were neutralized with NaOH before using. A portion of the enzyme-phosphate-magnesium ion mixture which had been aged, but not filtered, showed a higher respiration than any of the substrates added to the filtered preparation.

Boiling the aged and filtered homogenate for 30 sec destroyed enzymatic activity. Dialysis of the unfiltered mixture against phosphate buffer and Mg ion during the aging period also decreased activity markedly.

Adipose tissue from five birds was used in this work and it was observed that there were large variations in the activities of preparations from different birds, and fat deposits from different parts of the same bird.

Further work is being carried out on substrates for this preparation and on the path of the oxidation.

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A Simple Jet Type Air Stirrer[1]

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The paddle wheel type of air stirrer has been used in organic laboratories in order to reduce fire hazards. However, this type of air stirrer is noisy, clumsy, and lacks power. The jet type stirrer described in this article is almost noiseless in operation, compact, and has more speed and almost as much power as a variable speed stirrer.[2]

[1] Contribution No. 384, Department of Chemistry. Funds supplied by Office of Naval Research and Bureau of Animal Husbandry under Research and Marketing Act.

[2] Cenco, Central Scientific Apparatus Company, Chicago.

[3] Sample of Antarox B-290 from Antara Products, New York.

The jet type stirrer can be made most conveniently from a 1-in. steel ball and brass or steel jets[3] (Fig. 1). A hole ¼ in. in diam and ¼ in. deep must first be drilled into one side of the steel ball, and a piece of steel ¼ in. in diam and 1¾ in. in length (A) inserted into the hole

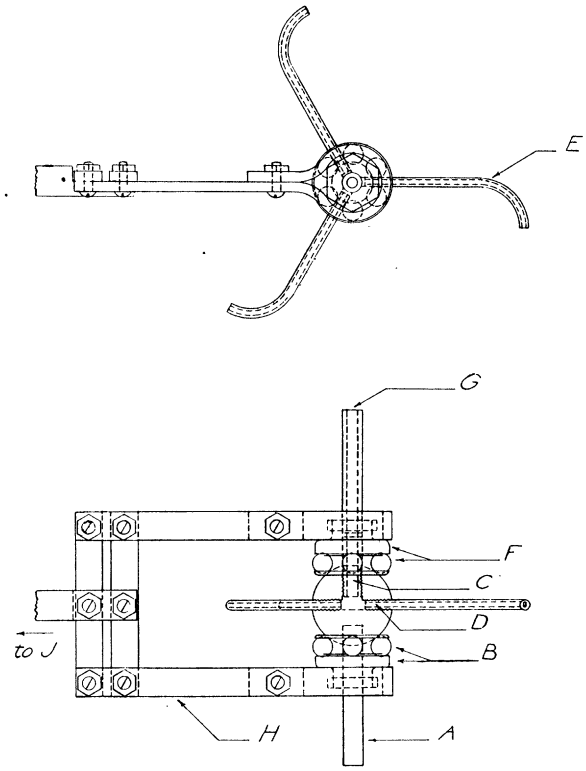

FIG. 1. Diagram showing construction of stirrer (guard around jets of hardware cloth 2 in. in width is not shown).

and brazed to the steel ball. The upper part of this 1¾-in. steel rod serves as a means of holding a ball-bearing race[4] and cone (B) and the lower part serves as a shank to which a stirring rod can be attached with either a piece of heavy rubber tubing or an ordinary steel chuck. A hole ¼ in. in diam and ½ in. deep (C) must then be drilled directly opposite the steel rod, and three holes 3/32 in. in diam (D) at a 120° angle to each other drilled so as to contact the lower half of the hole which had been drilled at (C). The three holes at (D) are then threaded, and threaded brass or steel jets screwed into them. These jets are bent slightly at point (E). The hole at point (C) is also threaded and a ¾-in. threaded steel tube screwed into it. The upper end of the steel tube holds another ball-bearing race and cone and a babbit bearing at (F). Another piece of steel tubing 1½ in. in length is threaded at one end and screwed into the bicycle cone. A piece of heavy rubber tubing is connected to the upper end of this steel tube and serves as an air inlet (G). The apparatus is held rigid by the steel bracket (H) clamped to a ring stand at (J). The speed of the stirrer can be adjusted by regulating the flow of compressed air.

[3] Ford V-8 carburetor jets or ⅛-in. steel capillary tubing.

[4] Front wheel bicycle race and cone.