It is hoped that outstanding pledges will be paid in the near future and that any persons still desirous of joining in the establishment of this memorial to Dr. Ransom will not delay longer.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE DEVICE FOR WASHING CULTURE TUBES

ONE of the most irksome and time-consuming operations of the bacteriological laboratory is the washing of culture tubes. Recently, we have been using a very simple piece of apparatus which has proved to be so satisfactory in this laboratory that we believe others will find it useful.

The device consists of a water-motor which attaches directly to the faucet by means of a screw connection. A 4-inch motor furnishing ⅛ h. p. on 80 pounds water pressure with a free speed of 4,500 revolutions per minute is used. Because of its simplicity, cheapness and ease of control this motor appears to be more satisfactory for the purpose than an electric motor. The test-tube brush is attached to the motor shaft by means of a metal chuck. We have found it more satisfactory to employ only about two inches of the bristle-tipped portion of the brush in a chuck about six inches long. This arrangement causes the brush to revolve steadily when running free and facilitates insertion into the tube. Brushes with straight bristle-tipped ends have been found more satisfactory than the newer kinds with the so-called "spray tuft" end. After the tubes have been given the preliminary preparation for brushing they can be handled rapidly and with much less breakage than by the method of hand brushing. The rate should approximate 800 to 1,000 tubes per hour.

So far as we are aware none of the supply houses is furnishing the complete apparatus at the present time. The chuck we are using can be made in a few minutes from a piece of brass rod of suitable size for attachment to the motor shaft and turned down to a diameter of about ¼ inch. A hole drilled in the end of the rod receives the brush wire, which is held in place by means of a screw. The entire apparatus costs only a few dollars.

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SPECIAL ARTICLES

NOTES ON A SPECIES CROSS IN MICE AND ON AN HYPOTHESIS CONCERNING THE QUANTITATIVE POTENTIALITY OF GENES

SPECIES crosses in laboratory rodents are not very numerous. That of *Cavia rufescens* Lund. and *C. porcellus* Linn. reported by Detlefsen,[1] and of *Rattus rattus* × *R. alexandrinus* studied by de L'Isle ('65),[2] and of Morgan,[3] are among the more important.

The present note deals with a cross between males of *Mus wagneri* (Eversman) from China[4] and tame *Mus musculus* females of a dilute brown race which has been inbred brother to sister in my laboratory since 1909.

Mus wagneri is small, nervously active, with relatively long ears and short tail, and is white-bellied, black agouti in color. This color variety was first described genetically by Cuénot[5] as a "gris à ventre blanc." It is allelomorphic and epistatic to ordinary grey-bellied black agouti.

The hybrids were easily obtained, grew vigorously, and were intermediate in size between the two parent species. In color they were white-bellied black agouti, but with deeper pigmentation than that of *M. wagneri*. In many of them the proportion of black hairs on the dorsal surface was very high, suggesting a weakened condition of the agouti pattern. The same tendency was seen in the ventral surface where dark-tipped hairs frequently were found in areas which in contrast to the white-tipped hairs gave a pattern which we have described as a "vest." It is extremely interesting to note this condition, which will again be referred to.

The three recessive genes of the dilute brown *M. musculus* females—a. (non agouti), b. (brown) and d. (dilution) disappeared in F_1 just as they would have done had the white-bellied black agouti pattern of *M. wagneri* been that of the same color variety of *M. musculus*.

A back cross of F_1 males and dilute brown females showed segregation of the three genes. The eight classes listed below were expected in equal numbers. The actual figures, however, depart widely from equality as follows:

[1] *Publ. Carnegie Inst. of Wash.* (1914) No. 205.

[2] *Arch. f. Rassen u. Gesellschafts Biologie* (1911) 8; 697.

[3] *Am. Nat.* (1907) 43; 182–

[4] I am greatly indebted to Dr. Sheo Nan Cheer, who personally brought with him from China the live specimens of *M. wagneri* which form my breeding stock of that species.

[5] *Arch. Zool. Exp. et Gén.* (1911) 8, 40–56.