mel's original description. The publication, "Essais Entomologiques," Nos. 1 to 7, was printed in St. Petersburg and was evidently issued in installments from 1822 to 1829. According to the Union list of serials in libraries of the United States and Canada, only three institutions have copies, and none of them owns the complete work. The Museum of Comparative Zoology (Cambridge) is listed as having Nos. 4 and 6; the Academy of Natural Sciences (Philadelphia) Nos. 4 to 7; and the American Philosophical Society (Philadelphia) No. 6.

The department of entomology at Cornell University has the good fortune to own all seven numbers of these interesting essays. On the inside of the front cover appears the following statement: "A very rare work. This copy contains No. VII, of which Hagen observed, "so excessively rare as scarcely to be known." " In Hagen's "Bibliotheca Entomologica" (1862, Vol. 1, p. 391) under the title, "Essais Entomologiques" he says, "Die Essais sind nicht häufig; No. 7 sogar äusserst selten und kaum gekannt."

Hummel's original description of the webbing clothes moth, in this rare and interesting publication, is written in Latin and is followed by a brief statement in French regarding the habits of the insect. Suggestions are also given for controlling the pest, especially in furniture. Preceding the description is the scientific name, *Tinea bisselliella,* followed by an asterisk which refers to a footnote at the bottom of the page. The footnote reads, "Du mot latin 'bisellium,' canapé." But Hummel may not have been as well versed in the classics as he was in entomology, for his spelling of the Latin word is incorrect. The word "bisellium" has but one s. A Latin lexicon gives the following definition: "Bisellium, a splendid ornamental seat of honor (so called because there was room for two persons upon it, although only one sat thereon). . . ."

When Zeller[3] wrote a more extensive description of this insect he dropped the second s in *bisselliella.* Perhaps Zeller was a better student of the classics than Hummel. In 1853 Herrich-Schäffer placed the species in the genus *Tineola* and he also used one s. Walsingham[2] criticizes Zeller's spelling and calls attention to the fact that Hummel used two s's.

According to the rules of priority, a name must stand as published in the original description. Therefore, although the Latin word was misspelled by Hummel, the mistake must stand and the specific name of the webbing clothes moth must remain *bisselliella.*

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[3] *Linnaea Entomologica,* 6: 166, 1852.
[4] *Syst. Bearb. Schmett. Eur.,* 5: 81, 1853.

HUMAN NECROBACILLOSIS

NECROBACILLOSIS is an acute infectious disease due to *Actinomyces necrophorus* Löffler. This condition was probably first noticed by Dammann, in 1870, in diphtheritic infections in calves. Schmorl (1891) reported a fatal enzootic occurring the previous year among his laboratory rabbits. *A. necrophorus* was isolated from the caseonecrotic lesions. Schmorl and one of his assistants each had a small abscess on one finger from handling these rabbits. Stained smears of the pus showed the characteristic gram-negative, beaded bacillus. In 1910, the writer isolated *A. necrophorus* from the lesions on the hand of a veterinary inspector.

Following the above reports of human necrobacillosis, the literature contains cases of pseudodiphtheria, infections of the arm, abscesses and necrosis of the tissues of the hip joint, retropharyngeal abscess with gangrene and extension into the perithracheal and subcutaneous tissue and mediastinum. Two deaths occurred in the series. Recently the writer isolated *A. necrophorus* from a lung abscess of man.

Among the principal pathologic conditions (other than man) in which *A. necrophorus* is found may be mentioned lip and leg ulceration of sheep, gangrenous dermatitis of horses and mules, necrotic stomatitis in cattle and multiple necrotic foci in the livers of cattle and hogs. Spontaneous necrobacillosis has been observed in nineteen different species of animals.

A. necrophorus is a pleomorphic anaerobe. It may vary from cocci to long filaments, and from solid stained rods to filaments with granules. Spores are not formed. It is gram-negative.

Several mediums have been used for the growth of *A. necrophorus,* but a medium of veal infusion, peptone and cystine is very satisfactory. For primary isolation serum should be added.

To obtain the woolly colonies in agar stab cultures, one must not use too stiff an agar, 0.3 per cent. being satisfactory for the demonstration.

As *A. necrophorus* does not produce group agglutinins the agglutination reaction can not be used for the differentiation of this organism.

Hemolysis is another property that is variable; some authors state that necrophorus is strongly hemolytic, while others state that it is non-hemolytic.

The fermentation of carbohydrates is, likewise, at variance.

Subcutaneous injection of the microorganism into the rabbit produces an area of necrosis and, after a time, invasion of the internal organs, although some strains do not produce anything beyond the local lesion, which heals.

The difficulty of isolation of anaerobes in general, and of *A. necrophorus* in particular, is probably re-

sponsible for the low record of human cases of necrobacillosis. Material containing a pleomorphic bacillus with beaded threads should be grown under anaerobic conditions, in or on mediums containing serum. Anaerobic cultures of the blood should be made in all cases of infectious jaundice. Some of the tubercular hips are, in all probability, necrophorus infections.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A METHOD AND THE APPARATUS FOR THE STUDY OF PERMEABILITY OF GASES THROUGH THE BIRD'S EGG-SHELL

OUR previous study[1] of such physical factors of the eggshell as breaking strength, thickness, and relative number and size of pores (observed microscopically) convinced us that the eggshell has definite characteristics peculiar to the species of bird, the flock of birds of the same species, the birds of the same flock, and in a less degree to the eggs laid by the same individual.

Yet the structural and physical properties of the eggshell are found to be very important in regard to the storage and preservation of eggs for future use. For example, an egg with a thin or very porous eggshell would likely more rapidly evaporate or lose moisture, more readily absorb outside odors and gases, and allow more easy penetration by micro-organisms. All these conditions eventually would lead to some changes in physical state and possibly in chemical composition of the egg-contents and thus soon to a decrease in the nutritive value of the eggs.

Furthermore, the structural and physical properties of the eggshell have their biological significance. There is a constant loss of moisture and interchange of respiratory gases through the eggshell during the incubation. This rate of interchange of gases, or absorption of oxygen and elimination of carbon dioxide, is gradually increasing in volume per time with the embryonic growth and development. On the other hand, the eggshell furnishes the largest portion of the calcium needed for the building up of the skeleton of the developing embryo, thus leading to some changes in its physical properties. An egg with extremely thin or thick shell may therefore present an important biological problem in relation to the developing embryo.

It is evident, however, that from both the economic and biological points of view a reliable quantitative direct method of measuring the quality of a bird's eggshell would be very desirable.

In view of the above facts, during the past three years, our laboratory of experimental embryology has developed and improved primarily for scientific use a special electric apparatus for the direct and accurate measurement of the permeability of the bird's eggshell to various gases.

The apparatus, as shown diagrammatically in the accompanying Fig. 1, operates on the principle of

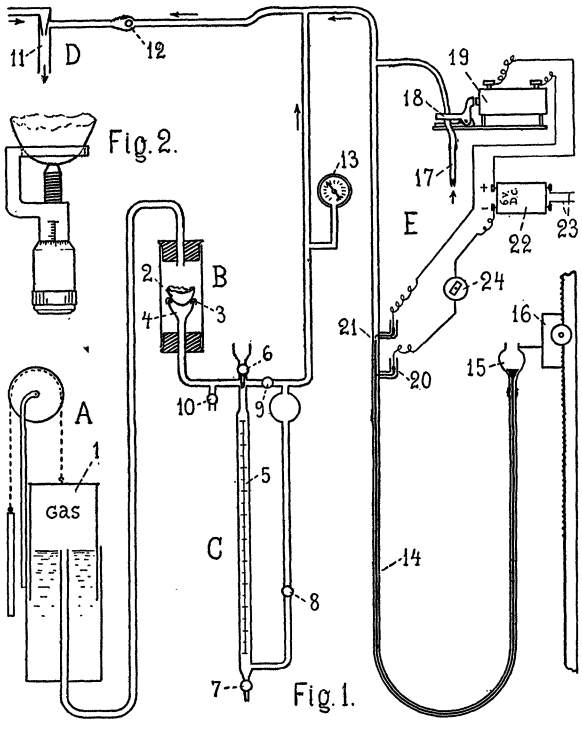

FIG. 1. A diagram of the apparatus for measurement of the permeability of a gas through the bird's eggshell. A, gas holder (1) with a gas; B, eggshell chamber, shown with eggshell (2), rubber gasket (3), and funnel (4) of one-inch inside diameter; C, micro-gas meter, consisting of a 50-cc. burette (5) funnel with glass stopper (6) for refilling of the burette (5) with water, drain stopcock (7), control stopcock (8), set up stopcock (9), vacuum relief stopcock (10); D, vacuum pump, including water suction pump (11) and back pressure valve (12); E, automatic vacuum controlling mechanism, consisting of vacuum gauge (13), adjustable monometer (14) with level bulb (15) and slide with screw (16), capillary tube (17), lever (18), induction coil (19), fixed contact point of the monometer (20), break point of the monometer (21), rectifying transformer (22), line of alternating current (23), and switch for the vacuum-controlling mechanism (24).

FIG. 2. A micrometric spherometer shown with a portion of eggshell, the surface of which is to be measured.

[1] A. L. Romanoff, "Study of the Physical Properties of the Hen's Eggshell in Relation to the Function of Shell-secretory Glands," *Biol. Bull.*, 56: 351–356, 1929.