

spira icterohaemorrhagiae were obtained from the kidneys of the dead guinea pigs. Healthy guinea pigs inoculated with kidney emulsion of these animals developed jaundice. The cultures from the original guinea pigs unfortunately became contaminated and were lost. We were never able to use these cultures for experimental infections and did not attempt to isolate others since we were interested solely in determining the presence of the parasite. Subsequent examination of over 50 rats has never resulted in another positive result. None of the kidney sections have shown spirochetes. From the morphological, pathological and cultural characteristics of these spirochetes we feel certain that they are *Leptospira icterohemorrhagiae*.

Schüffner and Kuenen⁸ have shown that leptospira are found to be more prevalent in old rats than in young rats. Fully one third of the rats examined by us were young rats. It is doubtful if more than one rat of the 6 composing series 192 to 197 was infected in view of the apparent rareness of the infection in our whole series. This, of course, cannot be determined.

The paucity of the *Leptospira icterohemorrhagiae* in the wild rats of the Philippines is in harmony with the clinical records regarding infectious jaundice. One may estimate that probably not more than 1% of the Philippine rats are infected with this parasite and perhaps this figure is high. Certainly infectious jaundice is not a clinical problem in the Philippine Islands and in view of this study there appears to be an adequate explanation for this.

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A Method for Experimental Production of Chronic Abscess of Lung.*

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(Introduced by Peyton Rous.)

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In the attempt to produce in an experimental animal an abscess of the lung that is identical with the postoperative pulmonary abscess in man, we considered the factor of chronicity to be of major

⁸ Schüffner and Kuenen, *Nederl. Tijdschr. v. Geneesk.*, 1923, ii, 2018.

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importance. In the work of Cutler, Holman, Schlueter, Holloway and Weidlein^{1, 2, 3, 4, 6} the abscesses produced by the embolic method were all of the acute type and healed spontaneously within 3 weeks after the embolus containing the bacteria had been set free into the general circulation. Van Allen, Fox and Colle⁵ showed the importance of cough in the prolongation of the suppurative processes in the lung. Because spirochetes, fusiform bacilli and other anaerobic organisms of the mouth are so frequently found in the chronic abscesses of the lung in man it was thought advisable to study the behavior of these anaerobic organisms when implanted in the pulmonary tissues *by means of an arterial embolus*. In previous experiments it was determined that when these organisms were introduced *by way of the bronchi* chronic pulmonary abscess was not produced.

Method: Series 1. 24 dogs. Material taken from the gum margins of a patient with *pyorrhoea alveolaris* was placed within a segment of vein and the ends of the vein tied with silk suture. The experimental embolus thus produced was forced into the venous circulation through a glass cannula by means of normal saline solution from a syringe. Fresh preparations of the material used in these septic emboli were examined with a dark-field microscope and a large number of spirochetes and various types of fusiform bacilli and innumerable other motile and non-motile organisms were found. Cultures of this material revealed the presence of both aerobic and anaerobic micro-organisms. In each of the 24 animals an abscess developed at the site of the lodgment of the experimental embolus. The progress of these experimental pulmonary lesions was followed by frequent roentgenologic examinations. Ten animals of this series are still living and show roentgenologic evidence of a localized pulmonary lesion. The other 14 animals died or were sacrificed at various intervals of from 5 to 15 weeks. For example, Dog 39 was sacrificed at the end of 101 days and was found to have a localized chronic abscess of the lung which, as far as gross and microscopic examinations are concerned, is identical with the chronic pulmonary abscess that is found in man. The wall of this abscess was about 4 mm. thick and the cavity of the abscess was

¹ Cutler, E. C., and Schlueter, S. A., *Ann. Surg.*, 1926, lxxxiv, 256.

² Holman, E., Weidlein, I. F., and Schlueter, S. A., *PROC. SOC. EXP. BIOL. AND MED.*, 1926, xxiii, 266.

³ Schlueter, S. A., and Weidlein, I. F., *Arch. Surg.*, 1927, xiv, 457.

⁴ Holloway, J. W., Schlueter, S. A., and Cutler, E. C., *Ann. Surg.*, 1927, lxxxvi, 165.

⁶ Weidlein, I. F., and Herrmann, L. G., in press.

⁵ Van Allen, C. M., Fox, R. A., and Colle, H. G., *PROC. SOC. EXP. BIOL. AND MED.*, 1927, xxiv, 485.

lined with a dark gray necrotic membrane. The contents of the abscess had a very foul odor. Cultures of the material from the cavity of the abscess of this animal were made on 12 different kinds of culture media and grown under 3 different forms of anaerobiosis besides the usual aerobic cultures. We were unable to grow aerobic organisms from this material but we were able to isolate 5 different anaerobic organisms which were obtained in pure culture. Each of the 3 types of anaerobiosis yielded the same group of organisms. These pure cultures of anaerobic organisms have been used in the same manner as the original material from the gum margins of the patient with *pyorrhea alveolaris* and some of these pure cultures of anaerobes have given rise to chronic abscesses of the lung that were similar to the lesion described for Dog 39. A further report on the end results of these experiments will be published later. In the rest of the 14 animals from which pathologic specimens were obtained at autopsy definite localized lesions were found which were similar to the chronic lesion described for Dog 39.

Evidence is therefore submitted that the chronicity of the experimental abscess of the lung in dogs is dependent upon the presence of a certain group of anaerobic organisms commonly found at the gum margins of patients with *pyorrhoea alveolaris*.

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Relation of Dietary to Effects of Relatively Large Amounts of
X-Rays on the Organism.

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In a study of the effects of x-rays on animals fed normal dietaries, diets varying in the content of vitamins A and B and diets varying in relative amounts of the basic constituents, protein, fat and carbohydrates, certain findings have been obtained.

As reported formerly,¹ 10 MAM (13 "e" units) of x-rays given twice a week to a full grown or growing rat, prolongs and increases growth on a deficient vitamin B ration. 25 MAM (34 "e" units) increase growth and lengthen life on a ration deficient in either

¹ Burrows, M. T., Jorstad, L. H., and Ernst, E. C., *J. Am. Med. Assn.*, 1926, lxxvii, 86.