Summary

The authors report the successful treatment of a heifer presenting all clinical symptoms of blackleg infection by the combined use of sulphathiazole and penicillin. Although the aetiological agent of blackleg, *Clostridium chauvei*, was not isolated by the usual methods of culture for anaerobic organisms the authors could observe in blood smears some Gram-positive rods undergoing a lytic process. The morphology and disposition of these bacteria suggest that they were clostridiae which had succumbed to the synergetic action of sulphathiazole and penicillin.

Porcine Infectious Rhinitis Experiments

By C. E. Phillips, H. F. Longfield and J. E. Miltimore*

THESE experiments were undertaken in an endeavour to reproduce rhinitis under controlled conditions and, if possible, to determine the cause. Previous observations of single infected animals being introduced into clean herds and the resultant spread of infection among the suckling pigs could indicate a reservoir of infection in the carrier animals. The possibility of a virus, bacteria or multiple agents coupled with the location of the infective agent presented material for this study.

The B. C. Research Council provided funds for this project and two undergraduate students were selected to do the detail work under supervision, and to provide material for their essay. This necessitated the completion of the project within five months.

For experimental purposes, three pregnant sows were purchased from a piggery on which rhinitis had not been observed at any time, and could not be observed in any pigs at the time of purchase. These sows

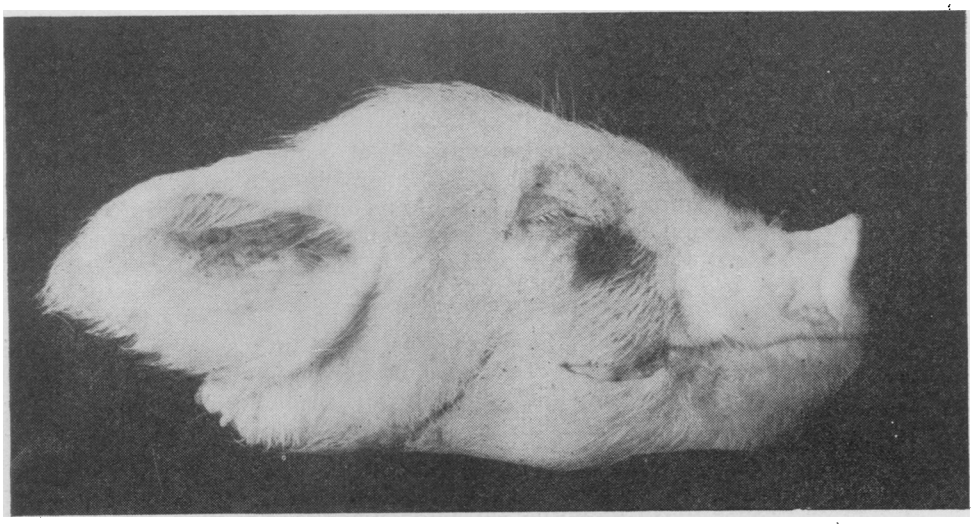

Figure 1.—Typical Black Patch of Rhinitis Hog.

were isolated in a building that had not been previously used for pigs. Equipment was new; fresh feed and bedding were obtained, and the

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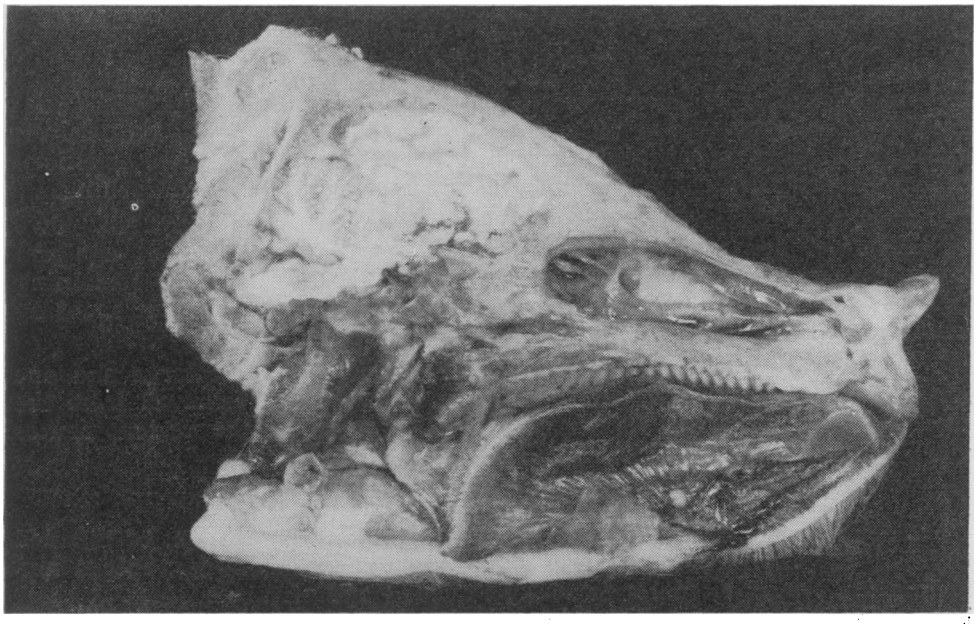

Figure 2.—Complete Rarefaction of the Turbinate and Ethmoid Bones Comparable to Typical Cases.

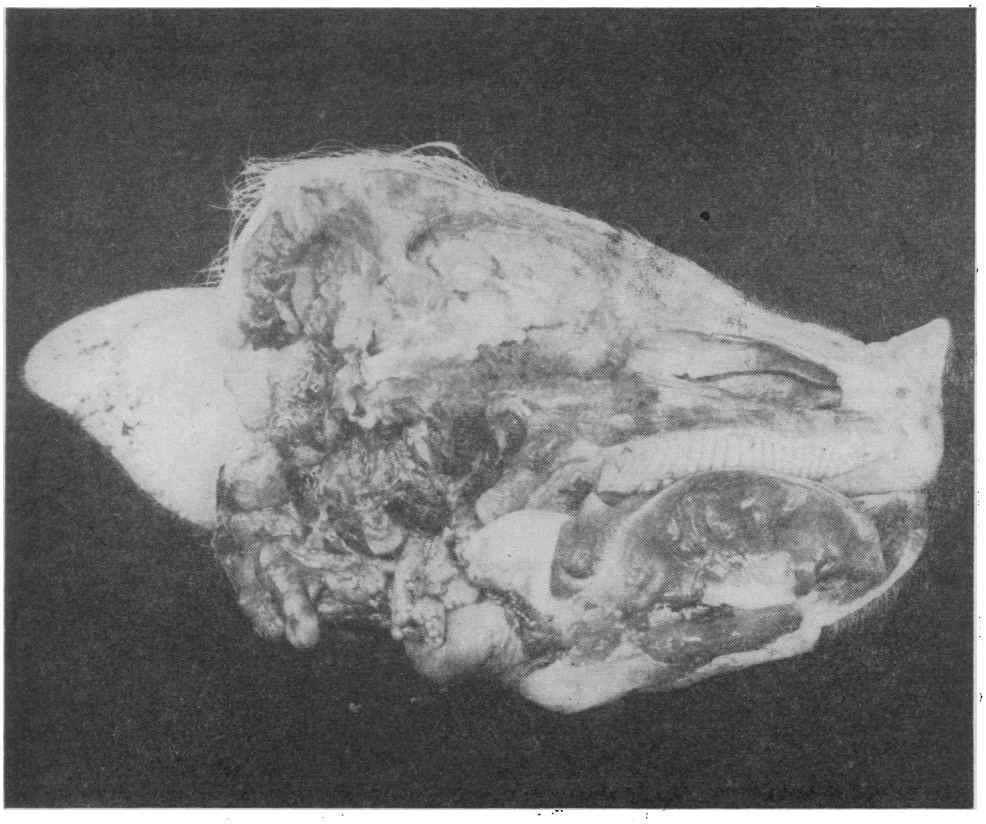

Figure 3.—Normal Head (Control).

attendant did not care for other pigs. The isolation quarters consisted of five new wards, within an isolation building, each ward an individual unit, separately heated, ventilated and drained. Bedding was autoclaved, utensils sterilized between hand feeding periods, and individual sterilized rubber gloves provided for each unit, and sterilized for each feeding.

Four pigs had been purchased from a rhinitis infected herd. Two of these weighed approximately 75 pounds at four months of age and presented the characteristic lesions of atrophic rhinitis. The remaining two weighed 20 pounds at two months and because of persistent sneezing were presumed to have the disease.

To provide infective material for Experiment #1 one large and one small pig were destroyed. The experimental pigs were removed from the sow into isolation when 48 hours old and infected by the various routes when five days of age.

Injection

Group No. 1: Two pigs received intraperitoneally 0.2 c.c. of blended thyroid, parathyroid, mediastinal and bronchial lymph nodes, spleen and mesenteric lymph tissue, aseptically removed and triturated in a Waring blender with physiological saline.

Group No. 2: The upper respiratory tract was curretted and washed to supply material for this group. This material was triturated in a pestle and mortar using sterile sand as an abrasive. This mixture was centrifuged in an angle centrifuge for 20 minutes at 2500 r.p.m., and the supernatant used for inoculum; 0.2 c.c. was injected intravenously into one pig and 0.2 c.c. given intranasally to the other. No. 2 pig was identified by a notch in the right ear. The object of centrifuging was to remove extraneous material and retain a virus if present.

Group No. 3: The two pigs in this group received 0.2 c.c. of citrated

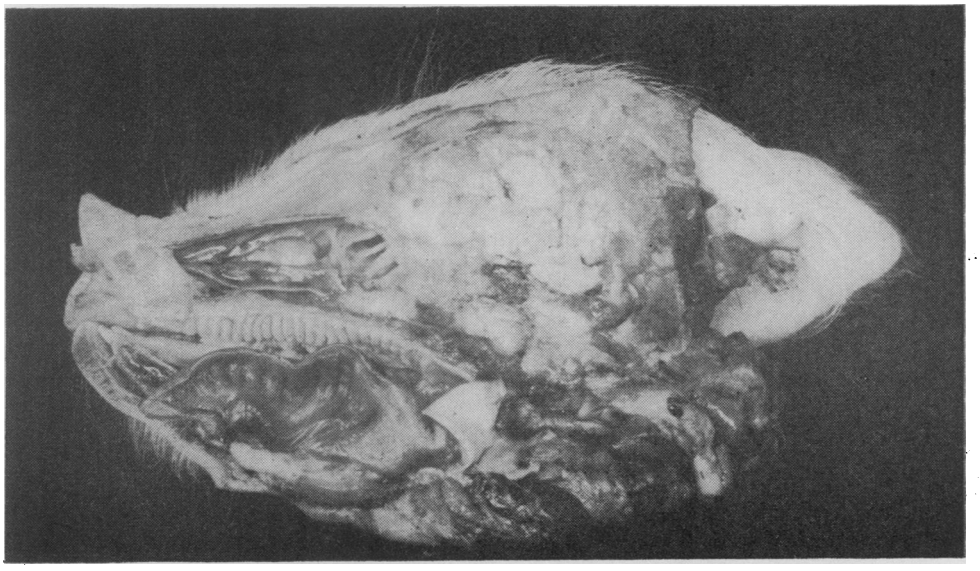

Figure. 6—Decalcification is Complete but Mucous Membranes are Intact

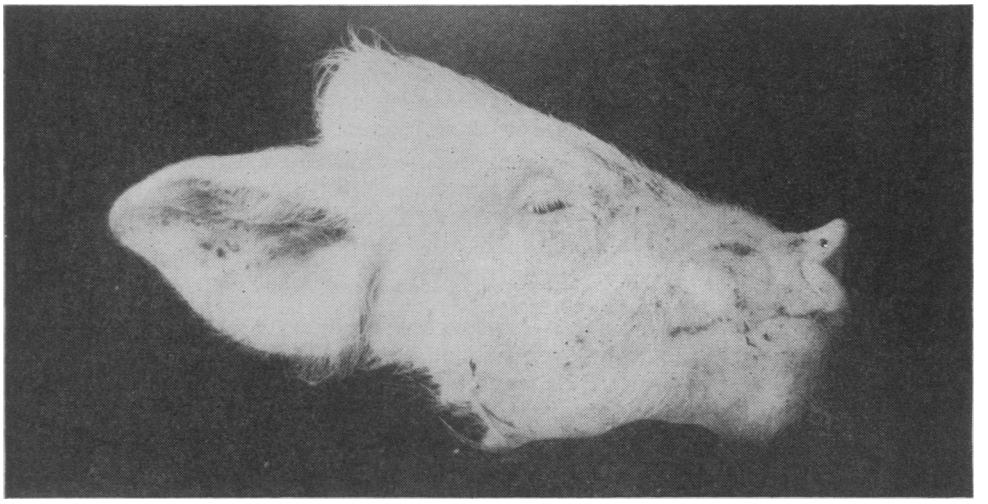

Figure 5.—Normal Head (Control).

blood, removed aseptically from the heart of the large rhinitis pig and injected intraperitoneally.

Group No. 4: 0.2 c.c. of bone-marrow, suspended in physiological saline, and obtained from the tibia of the rhinitis pigs, was given intravenously. This material was triturated before injection.

Group No. 5: Was retained as a control group.

Observations

Three days after injection the smaller pig in group #1 died of scours. A pig was taken from control group #5 and placed in the #1 unit.

Six days after inoculation group #2 and group #4 were observed to to be sneezing, a condition which became more pronounced but disappeared within four days.

Thirty-two days after injection it was decided to remove the pigs from isolation to a common piggery and prepare the isolation wards for two new litters due shortly. Infectious rhinitis was not observed in these pigs when post mortem examinations were performed at various ages.

Experiment II

Twelve pigs from two sows were used in the second experiment. These sows were obtained from the same piggery and kept under the same conditions as sow #1. They farrowed four days apart.

Ten pigs were removed, when two days and six days old, respectively, to isolation wards and distributed as in the previous experiment, two to each ward. The wards had been thoroughly cleaned and disinfected prior to the introduction, and left vacant for one week. Groups #1 and #5 each consisted of two pigs from the youngest litter and groups #2 and #3 and #4 consisted of one pig from each litter.

Inoculations

The larger of the remaining two rhinitis pigs was killed to supply inoculation material. This hog had typical rhinitis symptoms and lesions.

When the youngest litter was five days old, groups #1, #2, and #3 received intravenously 0.5 c.c. of supernatant from curretted nasal material centrifuged as in Experiment I. Group #2 also received 0.5 c.c. of uncentrifuged nasal material intranasally, and this intranasal inoculum was repeated every three days for three weeks.

Pigs in groups #1 and #4 received intranasally *Pasteurella suiseptica* and hemolytic streptococci ten days after the intravenous inoculation of group #1. This injection was repeated four times at four day intervals. Group #5 was the control group.

Post Mortem Observations

The smallest pig in group #1 developed severe arthritis and chronic pneumonia. Post mortem examination showed pneumonia, adhesions, and erosion of the joints. However, the turbinates were normal. The remaining pig developed arthritis and appeared cyanotic. It started to improve after three weeks, but remained stunted. It was killed on the 96th day, and post mortem showed old internal lesions, but the turbinates were normal.

The smallest pig in group #2 developed chronic pneumonia and became severely emaciated. It was prostrate on the 44th day and therefore was killed for post mortem examination. Extensive anterior lobe consolidation, adhesion, and necrotic areas were present. *Pseudomonas aeruginosa* and *Pasteurella suiseptica* were isolated from the lung. The turbinates appeared shrunken and soft, with a muco-purulent discharge present. The older pig from group #2, killed at 103 days of age, had sneezed persistently, commencing about three weeks after the initial injection. Figures 1 and 2 show the lesions observed in this case. Their respective controls are shown in figures 5 and 3. Externally, the black patches below the eye, caused by occlusion of the tear duct and collection of dust on the wet surface, were present. Rarefication of the turbinates and ethmoid bones was complete. It was interesting to note that while decalcification had taken place, the mucous membrane was intact and in the case of the ethmoid was suspended without bone structure, in the original position (Fig. 4). *Pseudomonas aeruginosa* and *Pasteurella suiseptica* were isolated. *Actinomyces necrophorous* was not demonstrated. It was thought that if this organism had been present there would have been necrotic destruction of the mucous membrane.

The youngest pig of group #3 developed pneumonia and died a week after inoculation. The usual pneumonia lesions were observed, but the turbinates and ethmoid bones were normal. The larger pig, killed 96 days after inoculation, was normal in all respects.

The youngest pig of group #4 died one month after injection, from prolapse, and umbilical hernia. The turbinate and ethmoid bones were normal. The remaining pig was killed at 103 days of age and post mortem showed a normal condition throughout.

Group #5, as control group, received no treatments. The pigs appeared normal in every way. One killed for post mortem examination at 103 days of age did not show any lesions. The turbinates and ethmoid bones were normal as in figures 3 & 4.

The remaining control pig will be raised to market weight and post mortem examinations made at that time.

Conclusion

These experiments would indicate that it is possible to reproduce rhinitis comparable to field cases by introducing curretted material from the upper respiratory tract of rhinitis pigs into the respiratory tract of healthy normal pigs at a very early age. The bacterial organisms used did not produce lesions, although *Pseudomonas auruginosa,* isolated from the positive experimental cases, was not used.

Further work should be undertaken in an endeavour to determine what factor or factors in the upper respiratory tract of rhinitis pigs are responsible for the lesions produced.

Studies on Neurotropic Distemper of Foxes

Part VII. — Blood Examinations of Foxes That Showed Varying Symptoms of Neurotropic Distemper and Recovered from the Infection

By Arnold H. Kennedy*

Introduction

DURING an enzootic of neurotropic distemper on a fox ranch, which has been discussed in a previous paper (1), a few of the foxes under observation showed symptoms of the infection, in varying degrees of intensity, and then recovered. Blood examinations and studies were made of these foxes. This paper presents the blood findings, their tabulations and the characteristics of the infection as it affected the foxes that recovered.

Methods and Techniques

The methods and techniques used were the same as those described in a previous paper (2) of this series. The terms used to designate the various blood cellular elements are also the same as those used in the previously mentioned paper (2).

For comparative purposes, table number 1 gives the mean findings, with minimum and maximum limits, for the blood of normal foxes of a similar age, as stated by Kennedy (3).

Tables 2 to 4 tabulate the haemoglobin grammes in 100 cubic centimeters of blood, and the various blood cellular elements of each fox that recovered from the neurotropic distemper infection. A discussion of the condition and symptoms of each fox, as found on clinical examination, is also included.

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