tween these two possibilities, absorption-experiments were carried out with the various antigens and antiserums. The results, summarized in Table II, indicate that chicken ovalbumin removes its own, specific precipitin from all 3 antiserums, and has no effect on any other precipitins which may be present in the serums. On the other hand, the pearl guinea fowl ovalbumin removed all of the precipitins from the pearl guinea fowl antiserum, while the amherst pheasant ovalbumin, in the amount added to the amherst pheasant antiserum, removed all heterologous precipitins but not the homologous one. In these cases, therefore, it appears that the injection of an apparently pure, homogeneous antigen has led to the formation of at least 2, and possibly more, distinct precipitins. These results are in accord with those of Hooker and Boyd[3] on chicken and duck ovalbumins and of Landsteiner[4] on azoproteins. This work is being extended to include a number of other ovalbumins.

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Chondroitin in Canine Anaphylaxis.

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The accidental discovery of Crandall and Roberts[1] that the administration of chondroitin sulphuric acid to patients with migraine frequently results in marked relief has not been explained. Since both the physiological action of chondroitin and the pathogenesis of migraine are only imperfectly understood, the therapy is of course empirical. Migraine has, however, been considered by a number of investigators as an allergic manifestation. Also chondroitin has been shown to have a protective action against liver injury due to a variety of causes.[2] The relationship between the liver and the anaphylactic reaction in the dog is well known. Consequently it was hoped that a study of the effect of chondroitin administration upon

[3] Hooker, S. B., and Boyd, W. C., *J. Immunol.*, 1936, **30**, 41.

[4] Landsteiner, K., The Specificity of Serological Reactions, Springfield, Charles C. Thomas, 1936.

[1] Crandall, L. A., and Roberts, G. M., *Ill. Med. J.*, 1933, **63**, 513.

[2] Crandall, L. A., Roberts, G. M., and Snorf, L. D., *Am. J. Dig. Dis. and Nutr.*, 1936, **3**, 289.

the anaphylactic reaction in the dog might contribute some information to these various and possibly related problems.

Chondroitin was administered to 13 horse-serum sensitized dogs in doses of 10 gm. per day. In 8 animals it was given during the last 10 days of the incubation period, and in 5 it was given for 10 days prior to the sensitizing injection and throughout the incubation period. The animals were anesthetized so that the degree of shock resulting from the assaulting dose of serum could be recorded by the blood pressure tracing. Definite shock occurred in all animals, 3 reactions being fatal, the remainder moderate to severe. The distribution of the various grades of severity of shock was identical with that in a large number of controls.[3] Consequently it is concluded that the administration of chondroitin does not influence in any way the anaphylactic reaction in the dog.

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Purified Bacteriophage from Lysogenic Cultures.

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The desirability of freeing bacteriophage from extraneous materials, such as media constituents, bacterial proteins and products of bacterial growth, has long been recognized and needs no emphasis. Efforts to obtain phage in a pure state have been numerous, and reports concerning the properties of phages of relative purity indicate that they differ from broth phage. The purpose of this paper is to describe a simple method for obtaining phage of low nitrogen content without the use of special media or equipment.

Bordet and Ciuca[1] noted that the late bacterial growth occurring after the period of maximum phage action continued to carry the phage through a series of transfers on artificial media. They called these lysogenic* cultures. During the course of a study of cultures

[3] Mills, M. A., and Dragstedt, C. A., *J. Immunol.*, 1936, **31**, 1.

[1] Bordet, J., and Ciuca, M., *Compt. rend. de Soc. de Biol.*, 1920, **83**, 1293.

* The term 'lysogenic' was later applied to and is now commonly used for cultures of the type first described by Lisbonne and Carrère;[2] *i. e.*, recently isolated cultures (usually *B. coli*) whose filtrates contained phage active on heterologous strains (usually dysentery bacilli of the Shiga or Flexner type).

[2] Lisbonne, M., and Carrère, L., *Compt. rend. de Soc. de Biol.*, 1922, **86**, 569.