investigated. Amounts of bacterial preparation were dissolved (*a*) in the œdema fluid and (*b*) in saline, and were then injected simultaneously into the two hind-paws of the same animal. No difference was observed between the response of the two extremities in three experiments.

Substances released after the injections are obviously involved in the production of œdema, but the presence of certain amounts of exogenous œdema-inducing material is necessary to produce 'regular' œdema, despite the fact that released substances are present in the possible endogenous form and concentration. In fact, if the presence of injected œdema-inducing material were unnecessary, and the liberated endogenous substances could act alone, then we could expect that œdema fluid would be continuously transmissible. As we have shown, this is not the case. All the substances mentioned in the first paragraph could perhaps become 'œdema-inducing' if they were administered in excess amount or in excess volume. Naturally, there are species differences.

I suggest, therefore, that the production of œdema in the rat's hind-paw, at least, is a primary function of the currently used œdema-inducing substances.

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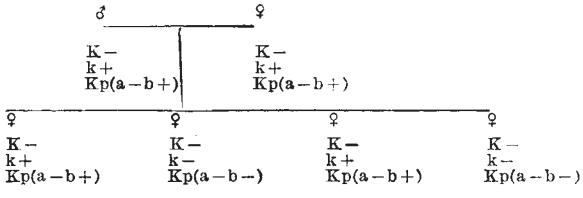
## A 'New' Kell Blood-Group Phenotype

DURING the past year or more, Dr. Fred H. Allen, jun.[1,2], of the Blood Grouping Laboratory, Boston, has opened up the Kell blood-group system through the discovery of two antibodies additional to anti-K and anti-k, called anti-$Kp^a$ and anti-$Kp^b$, which unquestionably define antigens in the Kell system. The former, he tells us, reacts with about two per cent of random bloods, while the latter reacted with all but 2 of 5,500. All bloods tested reacted with at least anti-K or anti-k and one of the new antibodies. In order to facilitate further investigation of the Kell system, Dr. Allen supplied certain laboratories, of which ours was one, with samples of these two antibodies. Having these to hand allowed us recently to define a new Kell phenotype, namely, K−, k−, Kp(a−b−), in two sisters. The Kell phenotypes of the family are as follows:




These have been confirmed both in Dr. Allen's laboratory and in that of Drs. Race and Sanger. The family is of Polish extraction. The parents are second cousins.

The propositus had been transfused in 1952; her blood contains antibodies of the Kell system, the exact specificity of which we have not yet been able to determine; her baby, born in 1957, suffered from hæmolytic disease of the new-born due to these antibodies, while she herself, given a bottle of K+, k+, Kp(a−b+), and a bottle of K−, k+, Kp(a−b+) blood, suffered a severe reaction with jaundice and oliguria. Her K−, k−, Kp(a−b−) sister was transfused in 1954; she has no Kell antibodies. At the time of the original transfusions, namely, in 1952 and 1954, each sister received blood from two donors; all four donors are K−, k+, Kp(a−b+).

The 'new' phenotype is put on record to further the study of the make-up of the Kell system.

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## Differences in the Food of the Young and the Adult Indian Mackerel, *Rastrelliger kanagurta* (Cuv.)

THE problem of the food of fishes with its varied bearings on their shoaling habits and migrations has engaged the attention of fishery biologists since the beginning of the present century. The mackerel is an important food fish in both hemispheres. Several contributions[1-5] have been made to our knowledge of the food of the Indian mackerel, *Rastrelliger kanagurta*, which contributes to one of the largest fisheries of India. All these observations, except those of Chacko[3], which are from the Gulf of Manaar, are confined to the west coast of India. According to these workers, mackerel is a noted plankton feeder, securing its food by filtration. Chidambaram[2], while observing the adult mackerel as plankton feeder, suggested the carnivorous habits of the young mackerel. Later, in a detailed account on the food of this fish, Bhimachar and George[4] observe that "the food of the young mackerel does not radically differ from that of the adult". Pradhan[5] has arrived at a similar conclusion regarding the food of mackerel; but one will not fail to note from his observations that young mackerel less than 89 mm. in total length are not represented in his material.

In the course of the present investigation, extending for more than a year, 593 mackerel belonging to all sizes ranging from 32 mm. to 243 mm. in total length have been collected from the Lawson's Bay landings near Waltair, and their food contents examined. From this analysis it became evident that mackerel of the size of 90 mm. and more in total length are plankton feeders, consuming large quantities of Protophyta (phytoplankton) along with some zooplankton. Further, it was noted that the adult mackerel is not an indiscriminate feeder. Though the proportions of the phyto- and zoo-planktonic elements in the stomach contents of this fish are more or less in accordance with their relative abundance in the plankton, a sort of selective feeding (avoidance) exists at least with regard to such macroplanktonic forms such as medusæ, ctenophores, salps and