case, using the fluorescence microscope, we were convinced of the presence of the benzpyrene also in the eggs when laid (Fig. 2). In this test the ratio of exceptions was 1 : 2,300, or 0·04 ± 0·03 per cent. The standard errors showed a statistically significant difference (0·16 ± 0·059) in the negative direction between controls and the second test. None of the treatments used gave any detectable increase in the non-disjunction frequency; but treatment with benzpyrene decreased the number of exceptional flies, that is, the mutation-rate. The reason for this is not known, but perhaps such chemical agents in the egg help in separating the synapsed *X*-chromosomes, whereas, on the other hand, it is known that colchicine causes an increase of exceptional flies[3].

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Chemical Composition of *Rickettsia prowazeki*

THE chemical composition of the causative organism of epidemic typhus fever, *Rickettsia prowazeki*, is quite obscure. A chemical study was therefore undertaken of *Rickettsia* cultivated in the lungs of white mice, purified suspensions of which are used for the preparation of vaccines[1].

A batch of mice (1–2 thousand) was sacrificed 3–4 days after intranasal inoculation. Those lungs in which the rickettsiæ were most abundant were selected after morphological control. The suspensions of minced lungs prepared in physiological saline were subjected to prolonged differential centrifugation at 4,000 rev. per min. until a sediment of pure rickettsiæ was obtained, which were then washed four times with distilled water. 250 mgm. rickettsiæ was prepared from the whole, and this mass was analysed for lipoids, proteins, nucleic acid, carbohydrates and ash according to the methods used in the study of viruses[2]. After three-fold successive extraction with acetone, alcohol and ether, and subsequent solution in chloroform, 113 mgm. lipoids (46·6 per cent) was obtained. The lipoids were divided into two fractions, namely, neutral fat (29·7 per cent) and phospholipids (15·8 per cent). A separate sample was subjected to 2-hour hydrolysis in 2 *N* hydrochloric acid; this yielded 4·1 per cent carbohydrates (by the Hagedorn–Jenssen method, computed in glucose terms). The ash content was 3 per cent. The residue after extraction of lipoids was used for determination of protein and separation of nucleic acid. Direct determination gave 30·2 per cent protein, and in the residue (77 mgm.) after extraction of nucleic acid, 34·7 per cent. After a two-fold precipitation the yield of nucleic acid was 29 mgm. or 12 per cent. Nucleic acid gave a positive Feulgen reaction (see table).

CHEMICAL COMPOSITION OF *Rickettsia prowazeki* AS COMPARED WITH THAT OF BACTERIA AND VIRUSES

	Proteus vulgaris[3]	*Sarcina lutea*[3]	*Sporangium* sp.[3]	*Gonococcus*[4]	*Ricket. Prow.*	Influenza virus[5]	Encephalomyelitis virus[6]
Lipoids	11·5			10–14	46·6	42–48	45
Phospholipids	4·2				15·8		35
Neutr. fat	7·2				29·7		10
Protein	47·2	67·6	37·4	71–83	34·7	52–84	49
Nucleic acid	13·0	10·5	12·6	14	12·0	3·5	4
Carbohydrates	14·2	8·5		3·5	4·1		4
Ash				6–10	3·0	5–6	

The above data are of interest from several points of view. It will be noted that rickettsiæ are rich in lipoids, approaching in this respect animal viruses. The high content of lipoids accounts for ether treatment of rickettsiæ as proposed by Craigie for the preparation of vaccines. As to the high content of nucleic acids (12 per cent), this brings rickettsiæ close to bacteria. The fact that nucleic acid of rickettsiæ belongs to the type of thymonucleic acid is of great theoretical importance in connexion with nucleic acid metabolism in intracellular infection. The comparison of the chemical composition of rickettsiæ with that of viruses and bacteria suggests that, in this respect and in their cultural and biological properties, rickettsiæ occupy an intermediate position between bacteria and viruses.

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Man's Reaction to Mosquito Bites

IN reply to the query of Dr. Bristowe[1], variations in the attractiveness of different individuals to mosquitoes can be demonstrated in field experiments, which prove that whatever attracts mosquitoes can be measured quantitatively. Anophelines are readily deterred by minute quantities of pyrethrum[2], and in huts sprayed regularly random ingress is eliminated, and it then becomes possible to demonstrate their acute discrimination. In such huts I found that *c.* 250 per cent more females of *Anopheles funestus*, *A. gambiæ* and *A. melas* were attracted to three men than to one man, and by rotating sleeping duties I showed that over a period of three months one of the four men used was fairly consistently more attractive than any of the other three.

Of greater interest was the proof that there was considerable variation in the attractiveness of the same individual at different times. I obtained daily catches of *A. melas* from three Africans sleeping separately in experimental huts under close supervision. Individuals often became more attractive than their companions, and remained so every day for a