were obtained by Olsson. The values of B'_3, B'_2 and B'_1 given by Olsson differed from those found by me, although the $\Delta_2 F'_2$ values were practically the same. Olsson's $\Delta_2 F'_2$ values for the $v' = 3$, 2 and 1 vibrational levels were, therefore, replotted and are also given in the table.

A complete report on the results obtained so far will be published in the *South African Journal of Science*. The perturbations observed in the $v' = 2$, 4, 6, 7 and 8 levels are being investigated further.

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[3] *Z. Phys.*, **100**, 656 (1936).

Open Packing of Spheres

MR. S. E. ACKERMANN'S axiom[1] that spherical lumps of coal of equal size have the same bulk density irrespective of the actual size is surely applicable to any symmetrical arrangement of such spheres, including the closest packing. The arrangement of spheres which he uses in his first calculation is symmetrical and satisfies the axiom, but is not a stable arrangement which would be attained by pouring the spheres into a box. His statement that the closest packing gives an increase in density as the size of sphere is decreased appears to be derived from an incorrect conception of what constitutes the closest packing. This is, of course, the arrangement in which each sphere touches twelve others (not eight), lines joining the centres forming a system of regular tetrahedra, and is the stable one which is taken up automatically.

Using Mr. Ackermann's nomenclature, the number of spheres per cubic foot is $n^3\sqrt{2}$, and the bulk density becomes $\frac{\pi}{6}\sqrt{2}$, or 0·739. This relation holds so long as the spheres are small compared with the dimensions of the container. A smaller density will obviously result if there are spaces nearly but not quite large enough to accommodate further spheres, and which are of the same order of dimensions as the container. Such a condition applies to the later examples quoted by Mr. Ackermann, but the results obtained even with the true optimum packing are obviously specific to a 10-in. cube and are not, therefore, of general application.

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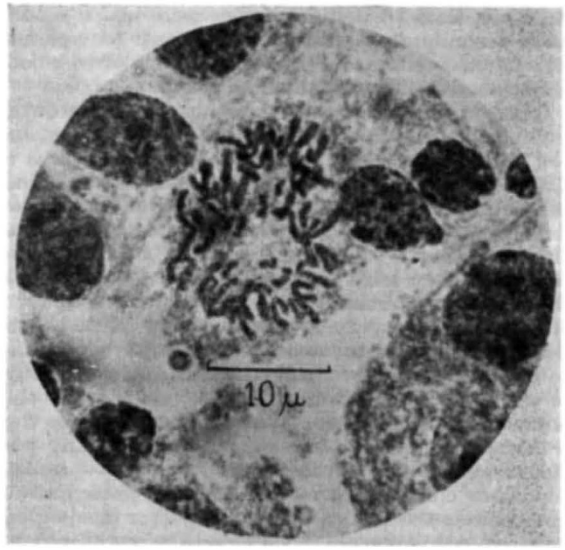
[1] *Nature*, **155**, 82 (1945).

Human Chromosomes

IN the last few years chromosome studies have made great progress both in theory and in methods. These methods are, however, little known outside genetical laboratories.

The application to human chromosome studies of the techniques developed in cytological laboratories has been a particularly useful complement to the histology of bone marrow, and its relations to normal and pathological hæmopoiesis. The results of this kind of work in hæmatology have been partly published[1,2], and the detailed morphology of human chromosomes is at present under investigation.



The accompanying photomicrograph from a slide made by the acetocarmine squash method[3] shows a metaphase plate in a mononucleated bone marrow cell obtained by sternal puncture.

So far as I am aware, no photomicrograph of human chromosomes as detailed as those obtained by such a method has been published.

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Feb. 8.

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Distribution of the *Rh* Factor in Indians

DURING the course of an inquiry into the incidence of hæmolytic anæmias in Bombay, it became evident that although a mild form of jaundice was common in the new-born, erythroblastosis fœtalis was not encountered in any of the 3,000 consecutive labour cases admitted to the Nowrosjee Wadia Maternity Hospital during the last six months. We were therefore interested in studying the distribution of the *Rh* factor in Indians. Bloods from 100 Indians were tested against known human anti-*Rh* sera (technique Taylor[1]). The results are tabulated below:

	O		*A*		*B*		*AB*		
	Rh+	*Rh*−	*Rh*+	*Rh*−	*Rh*+	*Rh*−	*Rh*+	*Rh*−	Total
Hindus:									
Male	12	−	13	−	9	−	4	−	38
Female	12	−	11	−	6	−	3	−	32
Muslims:									
Male	−	−	1	−	−	−	1	−	2
Female	1	−	−	−	1	−	1	−	3
Parsees:									
Male	1	−	6	−	1	1	−	−	9
Female	2	−	−	−	2	−	1	−	5
Christians:									
Male	−	−	1	−	−	−	−	−	1
Female	5	−	1	1	3	−	−	−	10
Total	33	−	33	1	22	1	10	−	100
British:									
Male	7	1	6	1	1	−	−	−	16