

LETTERS TO THE EDITOR

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STRUCTURE OF THE BAND SPECTRUM OF PHOSPHORUS AND NUCLEAR SPIN

THE band spectrum of phosphorus, as excited in a discharge tube has been photographed with a Hilger large Quartz Littrow Spectrograph and the bands (9, 21), (5, 21), (5, 18) and (4, 18) have been measured. The analysis of their rotational structure has led to the following values of the constants (in cm.⁻¹).

$$B'_{4} = 0.2346 \quad B''_{18} = 0.2799$$

$$B'_{5} = 0.2323 \quad B''_{21} = 0.2736$$

$$B'_{9} = 0.2255$$

The constant for $v' = 9$ agrees with that obtained previously by Herzberg¹ and also by Ashley,² the others being newly obtained. The absence of any perturbations in the rotational structure of the bands (5, 21) and (5, 18) has shown that the perturbations pointed by Herzberg must be only vibrational.

Elaborate quantitative measurements have also been made of the alternating intensities of the rotational structure lines in the case of the bands (5, 21), (5, 18), (6, 22) and (9, 21). The (5, 21) band alone gave an anomalous value 3.3, while for the others, the ratio, on an average, is 3.0. Such a high value (3.4 to 3.5) was obtained for this band also by Jenkins.³ But the anomaly cannot be ascribed to any effect of perturbations as the (5, 18)

band does not show the anomaly and the rotational structure has not revealed any perturbations. The high value is shown to arise from superposition by a faint band.

The intensity ratio leads to a value of $\frac{1}{2} \frac{h}{2\pi}$ for the nuclear spin of phosphorus, as determined by Ashley and Jenkins. Details of the results will be published elsewhere.

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August 30, 1942.

¹ *Ann. d. Physik*, 1932, **15**, 677.

² *Phy. Rev.*, 1933, **44**, 919.

³ *Ibid.*, 1935, **47**, 783. (Letter).

A PRELIMINARY NOTE ON THE INCIDENCE AND CAUSATION OF GLYCOSURIA IN PREGNANCY

ABOUT three hundred pregnant women attending the ante-natal clinic of the Bai Jerbai Wadia Maternity Hospital, Parel, Bombay, were examined. Their diet, as far as it could be gathered from personal history, was in most cases lacking in milk, fruits and green vegetables. The cereal consumed consisted almost exclusively of rice. Glucose was found to be present in the urine of about 30 per cent. of the subjects during the 7th, 8th and 9th months of pregnancy. Glucose tolerance tests of these

glycosuria cases indicated that 99 per cent. were cases of Renal Glycosuria and 1 per cent. of Pancreatic Glycosuria. These Renal Glycosuria cases revealed a low Ca and Vitamin C content in blood although the non-protein nitrogen content was normal. In these cases the percentage of urea in the urine was also found to be within the average normal limits. Administration of suitable doses of calcium and Vitamin C caused a disappearance of glucose from the urine.

Further investigations are in progress.

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BACTERIOLOGICAL EXAMINATION OF BLOOD, STOOLS AND URINE OF SUSPECTED CASES OF TYPHOID FEVER*

IN the course of an epidemiological investigation of typhoid fever in Bangalore City, an

examination of the blood, stools and urine in such of those cases where the diagnosis was inconclusive has been carried out. Whole blood was cultured only in those cases that were traced in the first or second week of infection; in the other cases culture of the stools, urine, the widal test and clot cultures were done.

Salenite. F. was used as a primary enrichment media for the typhoid group of organisms, the stools and urine being directly inoculated on this media in the field before being sent to the laboratory. Brilliant green bile broth, eosin-methylene blue and Wilson and Blair (Difco Company) were adopted for the final isolation of the organisms.

Blood Culture.—Seventy-eight samples of blood were examined as given in Table I.

Table I shows that in the 16 samples taken in the second week of infection from patients clinically diagnosed as typhoid, the blood culture was positive in 9 or, 52.2 per cent. of the cases. The remaining 3 samples taken in the third week were negative. Of these 9 positive cultures, 6 were positive for

TABLE I

Bacteriological and Serological Analysis of Blood

Nature of Culture	Total Number Examined	Clinically diagnosed as typhoid	Clinically Definite Cases Days after Onset								Number Positive		
			0-7 days		7-14 days		14-21 days		After 21 days				
			Specimens	No. Pos.	Specimens	No. Pos.	Specimens	No. Pos.	Specimens	No. Pos.	T	A	B
Whole Blood Culture	29	19	0	0	16	9	3	0	0	0	6	3	—
Clot Culture	9	6	0	0	1	0	2	0	3	0	—	—	—
Widal	40	25	1	1	16	14	3	1	5	5	17	—	4†

† Positive also for *B. typhosus*.

* The author is grateful to the Director of Public Health, the Health Officer, Bangalore City, the Medical Officers of the Victoria and Vani Vilas Hospitals and to the Superintendent, Bureau of Epidemiology, for valuable help rendered by them during the course of this investigation.

B. typhosus, 3 for *B. para-typhosus* A, and none for *B. para-typhosus* B.

It may be noted that out of these 9 positives 4 samples had been obtained from those who had developed the infection after inoculation with T.A.B. vaccine, and one from a patient