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Physics. — Dr. L. H. SIERTSEMA: "*The dispersion of the magnetic rotation of the plane of polarisation in negatively rotating salt-solutions.* II. *Further measurements with potassium ferri-cyanide.*" Communication N°. 76 from the Physical Laboratory at Leiden. (Communicated by Prof. H. KAMERLINGH ONNES.)

In the LORENTZ jubilee volume [1]) I have discussed some measurements on the negative rotation of solutions of potassium ferri-cyanide, where the rotation of the salt was found by letting the pencil of light traverse the solution and water alternately and by measuring each time the position of the dark band in the spectrum.

These measurements have now been continued with the same salt, in the first place to investigate the influence of some small improvements made in the apparatus and also in order to investigate whether the rotation constants, as they have been calculated for the different wave-lengths are really independent of the concentration of the solution.

The chief alteration in the apparatus is that now the two adjoining tubes, one for the solution and one for water are closed by means of the same glass plates. While formerly, when the two tubes were interchanged the spectrum was considerably displaced, because the glass plates were not perfectly parallel to each other, this displacement has now been reduced to a small quantity, and hence more certainty has been obtained in the determination of the wave-length. Moreover I could make use of sunlight which enabled me to determine the wave length still more accurately.

For the rest the observations were made exactly in the same way as before, with solutions of 1, $\frac{1}{2}$ and 2 per cent. For the calculation I have availed myself of the measurements of the magnetic rotation in water, published in the BOSSCHA Jubilee volume [2]).

The results are given in the following table. The symbols used are the same as in the previous Communication [3]) viz.:

λ_1 the wave length for the dark band in the solution.
λ_2 " " " " " " " " water.
φ_{λ_1} the rotation constant of the solution ⎫
$\varphi_{w\lambda_1}$ " " " " water ⎬ for the wave-length λ_1
$\varphi_{s\lambda_1}$ " " " " the salt ⎭

1) Arch. Néerl. (2) 5 p. 447; Comm. Phys. Lab. Leiden N° 62.
2) Arch. Néerl. (2) 6 p. 825; Comm. Phys. Lab. Leiden N° 73.
3) " " (2) 5 p. 457; " " " " N° 62 p. 451.

Solution 1%.

λ_1	λ_2	φ_{λ_1}	$\varphi_{w\lambda_1}$	$\varphi_{s\lambda_1}$
512	546	1.182	1.352	— 16.2
524	556	1.137	1.288	— 14.4
512	549	1.167	1.352	— 17.7
525	556	1.137	1.283	— 13.9
517	548	1.172	1.325	— 14.6
543	572	1.068	1.195	— 12.1
545	573	1.064	1.186	— 11.6
542	570	1.076	1.200	— 11.8
566	590	0.996	1.093	— 9.1
578	603	0.947	1.043	— 9.1
611	635	0.842	0.919	— 7.3

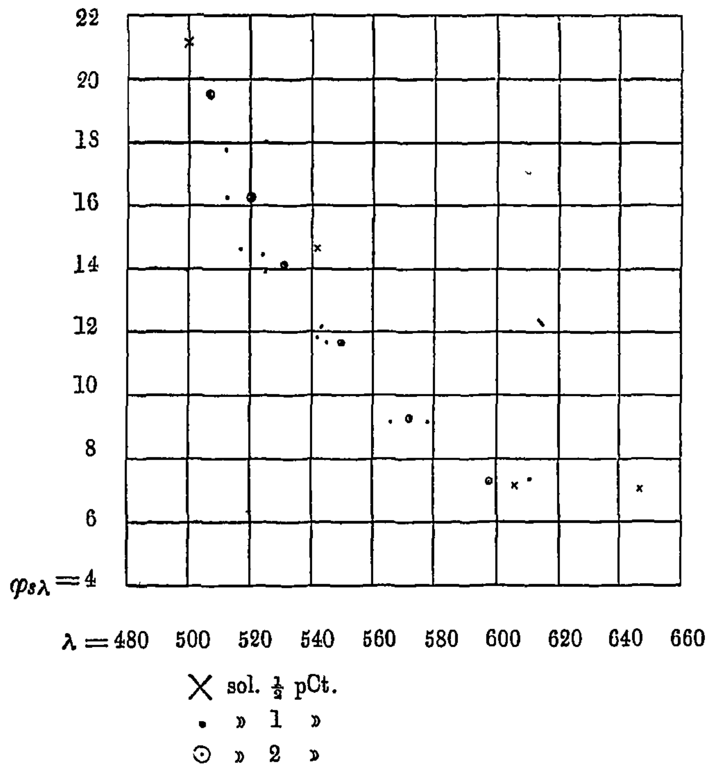
Solution ½%.

500	519	1.314	1.423	— 21.2
647	661	0.770	0 807	— 7.0
606	617	0.899	0.936	— 7.1
541	558	1.128	1.204	— 14.6

Solution 2%.

598	646	0.810	0.966	— 7.2
520	597	0.969	1.309	— 16.2
550	612	0 916	1.163	— 11.6
572	625	0 872	1.068	— 9.2
507	595	0.976	1.380	— 19.3
531	601	0.954	1.252	— 14.1

The results have been combined in the annexed figure, in which the rotation constant $\varphi_{s\lambda_1}$ is represented as a function of the wave-length λ_1. If we take into consideration that with the solutions of ½ percent the accuracy becomes smaller, on account of which we must not attach too much importance to the two deviating results for $\lambda_1 = 541$ and 647, it appears that no distinct variation of the rotation constant $\varphi_{s\lambda}$ with the concentration can be demon-



strated. The strong increase of $\varphi_{s\lambda}$ when approaching the limit of absorption ($\lambda_1 = 490$) is again shown here very distinctly.

The measurements will be continued with other salts. Possibly also the important theoretical results on the magnetic rotation in absorbing solutions found by VOIGT [1]) can experimentally be tested by means of this method.

Physiology. — Dr. C. WINKLER presents in the name of Dr. J. K. A. WERTHEIM SALOMONSON an essay, entitled: "*A new law concerning the relation of stimulus and effect.*"

Whenever a stimulus, is applied to a biological element this fact will generally be followed by a stimulation-effect. In cases where a contractile protaplasma is concerned, the effect will consist in contraction of the protoplasma. With other elements, like neurones the stimulation is transformed into a potential-wave, extending itself with moderate rapidity, some dozens of meters per second, along the nerve-

[1]) Drude's Ann. 6 p. 734.