Observations on the Preparation and Properties of Silicic Acid Gel," which was published in March 1925. In this paper we describe the fibre-like crystals of sodium chloride obtained when crystallised from silicic acid gel. This publication seems to have perturbed Mr. Krishnamurti, since in his note of June 1926 he emphasises the fact that his *observation* was made prior to the date of the communication of our paper.

However, we decided to make no comment on Mr. Krishnamurti's remarks, knowing that our observations would receive such consideration from scientists as they deserved.

In a letter published in NATURE of December 11, 1926, Mr. Krishnamurti accuses us of having overlooked his contribution in our more recent publications. In particular, he refers to our paper published in *Proc. Roy. Soc.*, A, vol. 112, p. 468, 1926, on "Change of Crystal Structure of some Salts when Crystallised from Silicic Acid Gel: The Structure of Silicic Acid Gel." Mr. Krishnamurti's remarks are incorrect, even assuming that his note merited mention in our published work. If he will take the trouble to refer to our paper in the *Proc. Roy. Soc.*, he will find that the paper was communicated on May 17, 1926, hence it would be impossible for us to include in that paper a reference to a paper which was not published until June 1926.

Mr. Krishnamurti will also be interested to learn that we gave a summary of our last paper before the Chemistry Section of the British Association at Southampton in September 1925.

For Mr. Krishnamurti's information only we beg to state that our first observation of the formation of needle-like crystals of sodium chloride from silicic acid gel was in November 1923, but of course this was not publicly recorded until we had completed our investigation of the problem in hand.

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H. A. FELLS.

The Chemistry Department,
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Nottingham, Dec. 13.

[DISCUSSIONS of priority of observation or publication are of limited interest and tend to become purely questions of personal differences of opinion. We much prefer, therefore, not to give further space to such matters as are referred to in the above letter.—ED. NATURE.]

A Source for Resonance Radiation.

WHILE engaged in some experiments on mercury resonance radiation at Johns Hopkins University last spring, I became convinced that a less erratic and, if possible, more intense source than the usual water-cooled quartz arc was almost a necessity for some kinds of work. A high-voltage discharge seemed likely to be much steadier than a low-voltage arc, and an obvious way of cutting down self-reversal due to normal mercury vapour was to use a gas for the discharge, with mercury present at a relatively low pressure, secondary processes keeping the mercury atoms largely in excited states. Experimental work was interrupted, however, and it was only recently that an opportunity arose for testing such a source in comparison with a regular quartz mercury arc.

A quartz tube 7 mm. in diameter and 20 cm. long, provided with tungsten electrodes and containing argon at a pressure of about 6 mm. and mercury vapour at a pressure corresponding to 50° C. was excited by a small wireless transformer. The voltage across the tube was 1500. Used as a source, this tube produced an intensity of resonance of λ2536 about half as great as that produced by a water-cooled quartz arc of the usual type. The arc was used without a magnetic field, but was cooled during the exposures at such a rate that it was extinguished in about a minute, thus producing the maximum intensity of resonance. The argon tube required no cooling or magnetic field and seemed perfectly steady and capable of indefinite operation without attention. I am grateful to Messrs. Foote and Mohler for apparatus used in these tests.

It is probable that the intensity of the 'gas-discharge' source can be greatly increased. The pressures given above are approximately optimum values for the particular tube and excitation used, but the possibilities of obtaining greater intensity by using greater power input (the tube was comparatively cool), end-on illumination, other gases, perhaps an arc instead of a high-voltage discharge, etc., have not been tested. The device recommends itself as it stands, however, by its great convenience of operation and the ease with which it can be constructed in the laboratory. It appears likely that this source would be advantageous for resonance measurements when using a photo-electric cell instead of photographic plates.

It is quite possible that such a gas-discharge tube has been used elsewhere as a source for mercury resonance. Dorgelo has used a similar discharge, although for a different purpose. The tube is also quite similar to those used by Wood and others for sodium, but its advantages over the much-used water-cooled mercury arc have seemed worthy of this notice.

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Nov. 23.

Collisions of the Second Kind between Ions and Atoms or Molecules.

SOME experiments dealing with collisions of the second kind between ions and atoms or molecules have been performed independently and simultaneously in two different laboratories—one at Princeton University and one at the University of California. Through correspondence the different investigators have learned of each other's results and have decided to present jointly, in this letter, a preliminary report of this phenomenon, which heretofore has been unknown. In both researches, the apparatus used are essentially those described in the positive ray experiments by Smyth (*Proc. Roy. Soc.* and *Phys. Rev.*) and by Hogness and Lunn (*Phys. Rev.*). One set of experiments is the preliminary stage of a complete study of the whole phenomenon; the other is incidental to work on the positive ray analysis of nitric oxide.

Mixtures of two gases, in equal amounts, have been ionised by electron impact, the impact electrons having velocities well above the ionisation potential of either of the gases. In each case the relative amounts of the two ions formed were determined as a function of the pressure of the gas mixture in the apparatus, and it was found that the relative amount of that ion corresponding to the higher ionisation potential decreased regularly with increase of pressure. The phenomenon can be explained only by collisions between ions and atoms or molecules, in which the ions rob the colliding atoms or molecules of one of their electrons, the process taking place with evolution of energy.

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