

large relatively to the particles in the striation covering the most of the surface of the slide. But each of these straight settings of globules possessed a singular appendage, generally at one end only, but sometimes at both ends. It consisted of a brush-like tail composed of the brown filamentous chains of particles like those covering the slide as noted above. They gave the appearance of tufts, suggesting a growth of beaded fibers from the end of the string of globules. By focusing, these tufts or tails could be seen as projecting outward (upward) in an inclined direction. This means that the tufts did not lie on the slide surface, but sprang outward from the globule which carried it. The globule at the other end of the short chain (generally the largest in the line) was often to be seen as having a convergence upon it of the usually parallel striæ of the other parts of the slide, indicating clearly that the globules strung together were acting as small magnets with poles at each end, towards and from which poles, the convergence and divergence of the magnetic lines was indicated by the fine striæ of particles taking their direction.

The polariscope showed that the striated smoke layer caught on the slide has the same property of scattering or diffusing light (as plane polarized light) that the smoke oriented in the air by a magnetic field has, but, of course, the slide preserves the orientation and needs, to produce the results, no magnetic field after its formation or deposition. The slide covered with the striated smoke film is, in fact, a polarizer.

Examination between crossed Nicol's prisms (dark field) discloses the fact that the tufts of fine fibers carried by the rows of globules, show as luminous spots on the black field, clearly indicating that the groups or tufts have a polarizing effect if they are in proper relation to the rays passing through.

As was to be expected, any hollow vessel or enclosure capable of retaining the smoke from an iron arc can be used in demonstrating the original luminous phenomenon. A glass flask of from 1 to 2 liters is readily sensitized, as it were, by holding its mouth over an arc for a

short time, allowing smoke from the arc to enter, and then corking the flask. It may then be used to show the effects by allowing a beam of light to traverse it while held in the field of a current-carrying coil. While this was being done, it was noticed by Dr. Hollnagel of the laboratory that when the coil was traversed by an A.-C. current of twenty cycles, the flask, when near the coil, gave the usual effect of increased luminosity of the smoke in its interior. When, however, the flask was removed from the coil a distance of several feet, the steady luminosity was replaced by a flickering which kept pace, not with the alternations of current in the coil, but with the cycles only. The flickering was, as it appeared, at the cyclic rate. This flickering was noted even at a distance of twelve feet from the coil, although the coil was but 7 inches in diameter and about 2 inches in axial direction. The flickering is a curious effect, and it is difficult to explain, especially the fact that it appears to keep time with the cycles and not the alternations of current. It points to some sort of magnetic retention or polarization of the iron particles of the smoke. They may even rotate or oscillate in obedience to the field fluctuations, but there is needed much more work of investigation as to the cause of the peculiar behavior. The experiment clearly shows that a very moderate field intensity suffices for lining up the particles in the air, and so producing the luminous effect.

Emphasis is again given to the fact of the extremely small amount of iron particles suspended in the air, capable of giving a decided effect.

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SCIENTIFIC EVENTS

THOMAS HARRIOT¹

THE tercentenary of the death of Thomas Harriot, the mathematician and astronomer, occurred on July 2. Not only was he the most celebrated English algebraist of his time, but

¹ From *Nature*.

he was also one of the first astronomers in England to use a telescope, and, like Galileo, Fabricius, and Scheiner, was one of the early observers of the spots on the sun. Born at Oxford in 1560, he was a year older than Henry Briggs. He graduated from St. Mary's Hall, and became an ardent student of mathematics forty years before the inauguration of the first university chair of mathematics. At the age of twenty-five he entered the service of Sir Walter Raleigh, by whom he was employed in the survey of the newly founded colony of Virginia. The greater part of Harriot's life, however, was passed in the neighborhood of London, where he came under the patronage of Henry Percy, Earl of Northumberland, who gave him a pension and assigned him rooms at Sion House, which stands on the banks of the Thames opposite Kew. When the earl was confined to the Tower through the complicity of some of his family in the Gunpowder Plot, Harriot and two other mathematical worthies, Thomas Hughes and Walter Warner, often bore him company. They were known as "the three magi." Harriot appears to have passed an uneventful life, and at his death was buried in St. Christopher's Church, on the site of which now stands the Bank of England. A monument erected to his memory was destroyed in the Great Fire of 1666. As an algebraist Harriot is a connecting link between Vieta and Descartes. His "*Artis Analyticæ Praxis*" was not published until ten years after his death. The revival of his fame as an astronomer was due to von Zach, who, while on a visit to the Earl of Egremont in 1784, discovered some of Harriot's writings beneath a pile of old stable accounts at Petworth Castle; while the reduction of Harriot's observations of the comet of 1607 formed one of the first tasks of Bessel's astronomical career. Some of Harriot's manuscripts are in the British Museum.

THE INTERNATIONAL INSTITUTE OF AGRICULTURE

THE president of the International Institute of Agriculture at Rome has transmitted to the Secretary of Agriculture, through the State Department, a copy of resolutions

adopted in April, 1921, by the permanent committee of the institute, authorizing the conferring of the title "Donating Member" upon any person who makes a gift, donation, or contribution to the institute amounting in value to 10,000 Italian lire, which at normal rates of exchange is equivalent to about \$2,000.

The permanent committee wished to demonstrate in a tangible manner the gratitude of the International Agricultural Institute toward all persons whose generous impulse prompts them to make gifts to it in money or in kind, thereby contributing toward the fulfillment of the mission intrusted to it.

The permanent committee has already named as a donating member Mr. Victor Vermorel, member of the National Academy of Agriculture of France and former senator, thus testifying to him its gratitude for a generous gift which he made to it recently.

The International Institute of Agriculture was established as the direct result of the efforts of David Lubin, a successful merchant of California, with the active support of the King of Italy, who foresaw the advantages which would accrue to agriculture, commerce, and industry from an international clearing-house for systematically collecting and disseminating official information supplied by the various governments of the world on agricultural production, consumption, movements, surpluses, deficits, and prices of agricultural products, transportation, plant and animal diseases and insect pests, rural credits and insurance, standard of living, wages and hours of labor on farms, cooperative organizations of farmers, legislation affecting agriculture, and similar information. The international treaty was drafted at Rome on June 7, 1905, and has since been ratified by more than 60 governments.

The institute survived the trying period of the World War and is now entering upon a period of expansion and increased usefulness. Its work benefits all peoples. In accordance with the recent action of the permanent committee, which is made up of delegates from the adhering governments and serves as a board of directors of the International In-