A Liquid Commutator for Sinusoidal Currents.

MY attention has been drawn to a note in *NATURE* of January 11 (p. 253) which quotes from the *Electrical World* of New York "a novel method of obtaining sinusoidal alternating currents of very low frequency," described by Lieutenant F. Jarvis Patten. The method is to make a pair of conducting plates revolve in a vessel of liquid which also contains a pair of fixed plates. This liquid commutator, however, is not new. It was the subject of a joint patent taken out by Mr. C. G. Lamb and myself a year and a half ago, and it was used in connection with the magnetic curve-tracer in my British Association lecture at Edinburgh on "Magnetic Induction," and again at the Royal Society soirée last May. It has been, in fact, for some time an item in Messrs. Nalder's catalogue of scientific apparatus. A description of it was published in the *Electrician* of November 18, 1892. J. A. EWING.

Engineering Laboratory, Cambridge, January 26.

A Curiosity in Eggs.

A COMMON "barn-door" hen, belonging to a neighbouring farmer, recently laid an egg measuring $4\frac{1}{2}$ inches in length by 7 inches in circumference; weight 6 ounces. On this egg being carefully broken a second perfect egg, with hard shell of ordinary size (3 inches by $5\frac{1}{2}$ in circumference), was found floating in the contents of the outer one. The contents of both eggs appeared to be normal and healthy. This is surely a very unusual occurrence. E. BROWN.

Further Barton, Cirencester, January 16.

RICHARD SPRUCE, Ph.D., F.R.G.S.

ALTHOUGH little known beyond a limited circle of botanists and South American explorers, the subject of this notice was in many respects a remarkable man, who, under more favourable circumstances, would have acquired a wider reputation. He was the son of a schoolmaster at the village of Ganthorpe, Yorkshire, and at an early age showed a taste for botany, having compiled a "List of the Flora of the Malton District" in 1837, when he was just twenty years old. For some years he was teacher of mathematics at the Collegiate School, York; and during his holidays he explored Eskdale, Teesdale, Killarney, and other districts, paying special attention to the mosses and hepatics, among which he discovered many new species, which he described in the *Phytologist*, the *Transactions of the Botanical Society of Edinburgh*, and in the *London Journal of Botany*. In 1845 he went to the Pyrenees, where he spent ten months, chiefly devoted to his favourite groups of plants, among which he discovered a large number of new or rare species. These were fully described in a paper published in the *Annals and Magazine of Natural History* in 1849.

The delicate state of his health requiring a warmer and more equable climate than that of his native Yorkshire, he decided, by the advice and with the assistance of the late Sir William Hooker, to visit the Amazon valley as a botanical collector, with the object, if possible, of reaching the head waters of the Orinooko and the eastern valleys of the Andes, districts whose riches had been indicated by the explorations of Humboldt and Bonpland at the beginning of the century, but which no experienced botanical collector had since visited. Invaluable assistance was also given by the late Mr. Bentham, who undertook the great labour of dividing and distributing the dried plants as they arrived in England, and sending sets to those who subscribed for them, thus acting as an unpaid but most efficient agent. The same eminent botanist described most of the new species of flowering plants as they arrived, thus making known the value of the collections, and ensuring the sale of the whole of the specimens.

In July, 1849, Mr. Spruce arrived at Para (where the

present writer first made his acquaintance), and during the succeeding fifteen years carried out successfully a series of voyages and explorations in equatorial South America, surpassing in extent, probably, those of any other scientific traveller. A mere enumeration of these journeys can alone be given here, in order to show how much was accomplished amidst all the difficulties due to climate, scarcity of food, scanty means, and imperfect means of transportation, aggravated by solitude and ill-health.

After a few months in Para and its vicinity, he moved to Santarem, at the mouth of the Tapajoz River. Here he remained for a year, collecting and studying the remarkable shrubby vegetation which surrounds the town, consisting largely of species then entirely new to botanists. During this time he made an exploration up the river Trombetas and its tributary the Aripicuru to the limit of canoe navigation. The following year was spent at Manaos (Barra do Rio Negro) exploring the surrounding forests and streams. He next ascended the Rio Negro in a large boat of his own, so as to be able to collect and preserve plants during the voyage. Two months were occupied in ascending the river as far as San Gabriel, situated on the cataracts of the Rio Negro, where he rested seven months, making numerous canoe excursions across the river to the various islands and to tributary streams, not without danger amid the roaring waters produced by the granite rocks and reefs which for some miles here fill the broad river-bed.

Spruce next ascended the Uaupes River as far as the first cataract at Panuré or San Jeronymo, which he made his headquarters for another seven months. Here he was delighted by the richness and novelty of the forest vegetation, which was almost wholly new in species, and even in some of the genera. Many of the loftiest trees had flowers of extreme beauty, especially those of the natural orders Vochysiaceæ, Tiliaceæ, Bombaceæ, Lecythideæ, Rhizophoræ, and Rubiaceæ, and to add to the botanical interest of the district, when the rainy season brought the flowering of the forest trees to a close, the ground beneath them became ornamented with thousands of curious herbaceous plants, mostly leafless but adorned with delicate or brilliantly coloured flowers. These belonged mainly to the genera *Voyria*, *Burmannia*, *Ptychomeria*, and the *Triurideæ*. Here also fungi were more abundant than in any other locality visited, and about 200 species were collected, many of which were as varied and brilliant in colouring as the flowers themselves.

Leaving the Uaupes the traveller made his next headquarters at San Carlos, the first village in Venezuela situated on the north bank of the Rio Negro, not far from the entrance of the Cassiquiare. From this station excursions were made up the Rio Negro and many of its tributaries, and also through the entire length of the Cassiquiare to Esmeralda on the Upper Orinooko. He was now in the country explored by Humboldt and Bonpland nearly a century before, and collected hosts of plants, which were known only from the specimens sent home by those botanists, together with considerable numbers of new genera and species. In order to procure food in this notoriously hungry region, he made a special journey from San Carlos to the cattle district of the cataracts of Maypures on the Orinooko, travelling over the portage of Pimichin which forms a narrow watershed between the two great river systems. After twenty months in this district he descended again to Manaos, from which he had been absent three years, and prepared for his great journey to the Andes.

Ascending the main stream of the Upper Amazon, and entering its great southern tributary, the Huallaga, he passed beyond its first rapids, and by means of a small western affluent and a day's journey overland, reached Tarapoto. This is a town of about 7000 inhabitants,