

Puerto Vilches and then cross over to Bucaramanga and Pamplona near the Venezuelan frontier. The expedition forms part of the programme decided on in 1917 by the Smithsonian Institution, the New York Botanical Garden, and the University of Harvard, for the systematic exploration of the four north-western states of South America, and continues the work begun in 1922 by Mr. Killip in the country around Buenaventura.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—Two laboratory assistants at the Low Temperature Research Station, Cambridge—The Superintendent, Low Temperature Research Station, Downing Street, Cambridge (November 27). An assistant in mycology in the Pathological Laboratory, Harpenden, of the Ministry of Agriculture and Fisheries—The Secretary to the Ministry, 10 Whitehall Place, S.W.1 (November 29). A lecturer in chemistry at Armstrong College, Newcastle-upon-Tyne—The Registrar (December 1). Chemists, physical chemists and physicists for work under the Research Association of British Paint, Colour and Varnish Manufacturers—The Director of the Association, 8 St. Martin's Place,

W.C.2 (December 2). An assistant lecturer in organic chemistry in the University of Leeds—The Registrar (December 6). A demonstrator in mathematics at the Royal College of Science, South Kensington—The Secretary, Imperial College of Science and Technology, South Kensington, S.W.7 (December 7). A professor of anatomy in the University of Lucknow—The Registrar (December 31). A principal of the Denbighshire Technical Institute—The Secretary and Director of Education, Education Offices, Ruthin (December 31). A lapidary (male) for the Department of Mines, Ottawa, Canada—The Secretary, Civil Service Commission, Ottawa, Canada (January 6). A professor of physiology in the University of the Witwatersrand, Johannesburg—The Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (January 31). A principal of the University College of Wales, Aberystwyth—General Secretary of the College (January 31). A lecturer in geography at the Bedford Training College—The Principal, The Crescent, Bedford. A lecturer in mathematics in the Gordon College, Khartoum—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, S.W.1 (marked "Lecturer").

Our Astronomical Column.

COMET COMAS SOLA.—This comet is 1926 *f*, being the sixth to be detected during the year; but four of the six, also Neujmin's Comet, 1926 *g*, were periodic comets observed on their return to perihelion. Mr. G. Merton has photographed the new comet on two nights, and Mr. B. M. Peek sends the following notes on its physical appearance. With a 12-inch mirror, power 200, the diameter of the nebulosity is 1' using averted vision. Direct vision shows a coma of 15" diameter, and a stellar nucleus of 12 mag., the total light being fully 11 mag.

Herr Ebell has deduced the following orbit, which is still uncertain owing to the distance of the comet and its slow motion:

T	1927, May 14.333 U.T.
ω	62° 48'
Ω	57 15
<i>i</i>	24 57
log <i>q</i>	0.24405

EPHEMERIS FOR 0^h U.T.

	R.A.	N. Decl.	log <i>r</i> .	log Δ .
Nov. 21	2 ^h 40 ^m 25 ^s	7° 36'	0.4437	0.2614
29	2 32 25	8 19	0.4326	0.2548
Dec. 7	2 25 6	9 11	0.4213	0.2518
15	2 19 8	10 13	0.4097	0.2528

The comet is well placed for observation, being on the meridian before midnight. It is likely to become an easy telescopic object during December.

MODERN ASTRONOMY.—The July issue of *Natural History*, the journal of the American Museum of Natural History (vol. 26, No. 4), is an attractive number devoted entirely to astronomy. Prof. S. A. Mitchell (Director of Leander M'Cormick Observatory) writes on total solar eclipses, of which he has seen six, involving journeys of 50,000 miles in all. The three latest American eclipses of 1918, 1923, 1925 are described in great detail. That of 1923 had the best weather prospects, but the least successful results. Beautiful coloured reproductions of these three eclipses, by Mr. Howard Russell Butler, are given.

He describes his method of working in the second article. He notes that there are three factors of colour—brightness or value, prismatic hue, saturation. He makes rapid outline sketches, indicating in shorthand the values of these factors for each region, and works the picture up from these, using photographs to improve the outlines. He also reproduces a coloured picture of a lunar crater lit by a low sun. The sunlit portion is nearly white, with various faint tints. The part in shadow, lit by the sunlit walls and by the earth, varies from greenish brown to brown. The gibbous earth is shown, the ocean being blue, polar regions and solar reflection white, clouds and land light brown; the sky is dead black and star-studded.

Prof. G. E. Hale writes on solar tornadoes. He gives some beautiful spectroheliograms of prominences, filaments, and vortices, describing the paddle apparatus he has invented for imitating the latter. He mentions the curious change in polarity of sunspots at the beginning of new cycles, but points out that the change is not shared by the high-level hydrogen vortices, which seem to follow the same law of rotation as terrestrial storms. Incidentally, he refers to stars using their energy to build up the atom from electrons and protons. Inasmuch as other physicists are relying on the stars deriving their energy from the atom, to explain the immense duration of their life as suns, there would seem to be need of co-ordination, so that astronomers may not be liable to the accusation of forgetting the conservation of energy, and trying both to "eat their cake and have it."

W. J. Luyten writes on "island universes." He takes the recently adopted distances (ranging from a million light years) as fully established, and studies their size, etc., on this basis. He dates the "era of island universes" from Lord Rosse's discovery in 1845 of the great spiral nebula in Canes Venatici; but surely Sir William Herschel is entitled to the pioneer honours. Many of his estimates of the size and distance of these objects were of the same order as those adopted to-day.