sent to the authorities of the college or university of which the candidate is, or has been, a member, and must reach the Secretary by Feb. 8, 1932. Further information can be obtained from the Secretary, Commonwealth Fund Fellowships, 35 Portman Square, London, W.1.

Calendar of Geographical Exploration.

Jan. 1, 1841.—The Antarctic and the Ice-Barrier.

Under the direction of Capt. J. Clark Ross, R.N., an expedition consisting of two ships, the *Erebus* and the *Terror*, crossed the antarctic circle to prosecute surveys for the British Government. From the point of view of geographical discovery, this was the most fruitful of all antarctic voyages. Ross was an experienced arctic traveller and had located the north magnetic pole in 1831. Under his direction, ships for the first time deliberately pushed their way into the pack ice. This ice, previously thought to stretch on indefinitely to the remote land, proved to be a belt about a hundred miles wide, and the *Erebus* and *Terror* passed through it to open waters now known as Ross Sea. By Jan. 11, Ross had sighted the rocky coast of South Victoria Land and had noted the Admiralty Range running north-west along the coast, and a further range going southwards. Unable to reach the mainland, he landed on Possession Island and claimed the newly discovered land for Britain. Later he sighted an active and an extinct volcano, named respectively Erebus and Terror after the vessels. The great ice barrier, with peaks 200 ft.-300 ft. in height and extending for 250 miles, seen for the first time, checked his farther southward progress. Like the Frenchman, Dumont d'Urville, who had set out from Hobart on Jan. 1 of the previous year, he was compelled to give up the dream of reaching the south magnetic pole, though he penetrated nearer to it than any previous explorer.

Sixty-one years later, on Jan. 1, 1902, the *Discovery*, with Lieut. R. F. Scott, R.N., as its commander, and with E. H. Shackleton, R.N.R., as one of its lieutenants, met the pack ice and thence penetrated to Ross Sea. The ice-barrier had retreated 30 miles since Ross was there. Scott found that the land which Ross had believed to lie east of the ice-barrier, but which he had cautiously charted as an "appearance of land", was plainly visible. its higher summits rising 2000 ft.-3000 ft. above the sea. It was further discovered that McMurdo Bay, charted by Ross, was in reality the opening of a strait leading southwards between Ross Island and the mainland. Mt. Erebus proved to be not on the mainland, but on what is now mapped as Ross Island.

Jan. 2, 1923.—The Libyan Desert.

A. M. Hassanein Bey left Sollum, a small port on the Mediterranean near the western frontier of Egypt, on his difficult journey southward through the Libyan desert to Darfur. As a result of his work important new facts about the orography and geology of the region were recorded. His discovery of the rock basin oases of Arkenu and Owenat makes possible further desert travel in the still unexplored regions of the Libyan desert. His route linked up with Tilho's explorations in the French Sudan and confirmed the latter's conclusion that Lake Chad has no possible drainage outlet in an easterly direction.

Jan. 7, 1830.—The Murray River.

Charles Sturt launched a boat on the Murrumbidgee and sailed thence along the Murray to the sea. He had previously discovered a portion of the Darling River; this second "bold and desperate" venture solved the nature of the inland river drainage of south-eastern Australia.

Societies and Academies.

CAMBRIDGE.

Philosophical Society, Nov. 23.—**T. M. Lowry** and **C. B. Allsopp**: Refractive dispersion and the problem of 'optical exaltation'. A thin film of liquid is placed between the plates of a quartz etalon and the interference bands are focused on the slit of a spectrograph. The order of the interference bands is deduced from pairs of refractive indices determined with a refractometer. Refractive indices can then be deduced to four places of decimals in the visible or ultra-violet regions up to the limit of transparency of the film.—**T. M. Lowry** and **H. K. Gore**: Optical rotatory power of vapours. Measurements have been made of the rotatory dispersion of camphor and of camphorquinone as vapour and in solution. In the region of absorption, camphor gives a curve with a composite maximum. This is explained by the composite char acter of the ketonic absorption band, as evidenced by the fact that the curve of circular dichroism covers a smaller range of wave-lengths than the absorption curve.—**T. M. Lowry** and **H. Hudson**: Absorption and circular dichroism of optically active substances. Measurements have been made of the absorption, circular dichroism, and rotatory dispersion of a series of bornyl xanthates. The two absorption bands are optically active but of opposite sign. The curve of circular dichroism therefore crosses the axis, as is observed experimentally in the methyl xanthate.—**C. P. Snow**: Fine structure of absorption bands in crystals. The absorption bands of compounds of the rare earths in the crystalline state show well-marked discontinuities similar to the line spectra of the atoms. This has recently been shown to be due to the 'shielding' of an inner incomplete electronic group throughout the series of the rare earths. There is a marked sharpening of the lines when the crystals are cooled to liquid air temperature and below. Reasons for this have been discussed (see Snow and Rawlins, NATURE, **125**, p. 349; 1930).—**R. G. W. Norrish**: Predissociation in relation to photochemical activity. A large group of primary photochemical effects may be correlated with the condition known as predissociation in the molecular absorption spectrum. With aldehydes and ketones, however, although photodecomposition coincides with predissociation, it is difficult to envisage the mechanism of the change, since the chemical data for some fifteen examples indicate that no free radicals are produced. It would appear that molecular rearrangement involving more than one bond occurs within the molecule.

PARIS.

Academy of Sciences, Nov. 23.—**H. Vincent** and **L. Velluz**: The immunigenic properties of the diiodosalicylic cryptotoxin. From experiments on guinea-pigs, it has been proved that the diiodosalicylic cryptotoxin, the preparation of which is given, is capable of rapidly conferring immunity against pure tetanus toxin. This cryptotoxin neutralises the tetanus toxin, the latter not being destroyed but converted into a harmless complex. This non-toxic complex rapidly immunises animals.—**C. Sauvageau**: The third kind of plurilocular organs of *Ectocarpus secundus*.—**Paul Montel**: The upper limit of the moduli of the zeros of polynomials.—**Eduard Cech**: The theory of dimensions.—**Maurice Janet**: The minimum of the ratio of certain integrals.—**J. A. Lappo-Danilevski**: The decomposition of the normal integral matrix of a system of linear differential equations and the construction of the primitive