

Research Items.

THE ORIGIN OF THE MASAI AND THE WILD TRIBES OF BORNEO.—In the *Journal of the East Africa and Uganda Natural History Society*, No. 26, August 1925, Mr. C. Cardale Luck puts forward a theory that the Masai and related tribes of East Africa are the ancient Israelites, while the wild tribes of Borneo, the Kenyah, Kayan, Punam, etc., are the ancient Edomites. Merker's theory of the Semitic origin of the Masai, it is pointed out, might have been extended to identify them with the ancient Israelites, had it not been conditioned by the view that if their route of migration was through the Nile valley, it must have taken place in the prehistoric period before the Egyptian settlement. The historical evidence, however, points to the possibility of a movement of Asiatic peoples in the required direction in Egyptian historic times in the influx of Semitic peoples after the Hyksos period, the transference of captives after the Egyptian conquests, the flight of such of the Israelites as were not carried off into Assyria before the victorious armies of that power, and the desertion into Ethiopia of mercenaries, presumed to be Asiatic, under Psamtek and Tanutamen of the Nubian dynasty. Looking at the evidence afforded by the Masai and kindred tribes, distribution of language clearly suggests a north to south movement. The religion of the Masai, a trinity of Engai, a feminine supreme deity, and two inferior deities, a black or good god and a red or evil god, points to an original mother goddess worship, ultimately of Asiatic origin. The Canaanites in passing through Egypt confused her with Hathor, the minor gods of the Masai being Osiris and Set. Tribal names of the Masai also point to Canaan, Ma-a-sae, L'Aiser and Gidon being equated with Ma-na-say, Je-ezer, and Gideon. Similar equivalences are found in the Bornean religion, belief, and nomenclature and pointing to a Canaanitish origin.

SICKNESS, DEATH AND BURIAL AMONG THE MAORI.—Notes from a native source in the original and in translation relating to the ritual of death and burial among the Maori of New Zealand are given by Mr. Elsdon Best in the *Journal of the Polynesian Society*, Vol. 35, No. 1, which contain certain data not hitherto recorded, and some interesting formulæ. In former times there was little ritual pertaining to burial, and indeed the ceremonies performed over a sick person were more elaborate, possibly owing to the fact that the custom of exhumation and final disposal of the remains was looked upon as the real burial. There were several ritualistic performances by which the shamanistic adepts diagnosed the cause of illness. This was usually either black magic or infringement of the laws of *tapu*. The ceremony here quoted, for a chief seized with severe illness, involved the use of formulæ absolving a person from the polluting effect of all immoral or wrongful acts committed from childhood up to that time. The dead were usually disposed of by inhumation, but sometimes they were merely placed in a cave. The body was flexed before it was cold, the knees being drawn up to touch the trunk and bound with a cord. In a few cases it was exposed to a rude drying process. The exhumation took place some years, sometimes so many as eight, after the first burial, although, as a number of exhumations took place at one time, there must have been considerable variation. The function was one of remarkable *tapu*; it involved the employment of adepts and was carried out with an elaborate ritual; the final destination of the remains was a cave, fissure, or hollow tree. Great care and skill were exercised in removing the bones,

especially in recovering the small bones. Articles placed with the dead such as weapons and ornaments, both at the primary and secondary burials, were sometimes recovered for the relatives by a priestly adept, with the performance of certain ceremonial observances.

ALIEN PLANTS IN THE ISLE OF WIGHT.—The bulk of vol. 1, part 5 of the *Proceedings of the Isle of Wight Natural History Society* for 1924 is occupied by a list of the alien plants of Hampshire and the Isle of Wight, by John F. Rayner. The list is a very long one and has obviously been in compilation for some years, the author being helped by a number of local botanists, as well as by veteran systematists, as Dr. Claridge Druce.

AN ANTARCTIC FLORA.—The Australasian Antarctic Expedition, 1911-14, has recently published as vol. 7, part 5, some beautiful photographs of the very characteristic flora of Macquarie Island, which were not available when the late Mr. F. T. Cheeseman prepared his report on the vascular flora of Macquarie Island, owing to the disturbance of personnel and records of the expedition brought about by the War. The photographs of *Pleurophyllum Hookeri*, of *Stilbocarpa polaris*, and of such cushion plants as *Azorella selago*, are of great ecological value, some photographs giving detail of individual plants beautifully, whilst others show in a striking manner their characteristic distribution on this wind-swept antarctic island. All the conspicuous members of the flora are represented photographically in these 19 plates, while Mr. Harold Hamilton supplies brief notes on the ecology.

PENTOSANS AND COLD RESISTANCE IN PLANTS.—Of recent years, American workers, especially J. T. Rosa and Victor R. Boswell, have tried to establish a connexion between the pentosan content of certain plants and their resistance to frost damage. The underlying assumption has been that the water-imbibing properties of the colloidal pentosans have enabled these plants to retain the water in this form and thus resist the tendency to ice-formation and consequent protoplasmic disorganisation. Arguing further that the retention of water by imbibition by the pentosans should be effective against force of dehydration, Rosa compared the transpiration rates and rates of drying of cold resistant and non-resistant plants. Both Rosa and Boswell agree that the hardened plants lose water more slowly under comparable conditions, and suggest in fact that this property provides a simple test, in horticultural practice, of the relative hardiness of a plant. This attractive theory comes out very badly from a thorough investigation by Prof. Doyle and Miss Phyllis Clinch, of the Department of Botany, University College, Dublin, who have tested its application to evergreens, and particularly conifers. In conifers they conclude (*Scientific Proceedings of Royal Dublin Society*, vol. 18 (N.S.) No. 21, 1926) that no relation, seasonal or otherwise, can be established between hardiness and pentosan content. Furthermore (same *Journal*, No. 24, 1926), they show that the rates of drying show no relation to pentosan content, and on physico-chemical grounds there seems little reason to expect any other result, whilst until Rosa and Boswell have repeated their drying experiments with chopped-up tissues, there is little or no reason to assume that pentosan content has any connexion with the differences in drying shown by hardy and non-hardy varieties.

MINERALS FROM THE RUBY MINE DISTRICT OF BURMA.—A notable contribution to the mineralogy of Burma is published by F. D. Adams and R. P. D. Graham in the *Trans. Roy. Soc. Canada*, Section 4, 1926, p. 113. Between the Irawadi and Mogok the exposures show alternating bands of gneiss and coarsely crystalline limestones which recall the sections through the Grenville series of the Canadian Shield. Half way along the road to Mogok a large intrusive body of granite occurs with an enormous pegmatite dyke near its eastern border. The dyke is made up mainly of kaolinised orthoclase and quartz, the latter being often in large transparent crystals. Lepidolite crystals up to six inches across are described, and muscovite, topaz and cassiterite. An interesting nepheline-sodalite rock occurs at Mogok, the sodalite from which has a beautiful deep lilac colour. The colour fades on exposure to light, and disappears immediately when the mineral is slightly warmed, this being a characteristic of all pink sodalite. A nepheline-agerine-augite rock (urtite) was found at Sinkwa, 13 miles from Mogok. Both nepheline rocks resemble very closely varieties occurring in the Bancroft district of Ontario, and afford additional examples of the common association with crystalline limestones. Other minerals described are chrysoberyl, sillimanite and forsterite from Mogok. A more detailed description of the geology of this part of Burma, together with an account of the methods adopted in working the deposits for rubies, was given by Prof. Adams in the *Bull. Canadian Inst. Min. Met.*, 29, Feb. 1926.

PLATINUM IN SOUTH AFRICA.—In *Economic Geology*, Nos. 2 and 3, 1926, Dr. P. A. Wagner gives a very full account of the occurrence of platinum in the Transvaal and Southern Rhodesia. As the chief deposits have already been noticed in NATURE, attention is here directed to the genetic considerations with which Dr. Wagner concludes his study. Concentrations of platinum are more widely distributed in South Africa than in any other part of the world, and the platinum-bearing rocks have been produced in practically all the periods of igneous activity from the earliest Archæan onwards. From the Vaal River to the Zambesi the principal deposits are confined to a narrow meridional belt that cuts indiscriminately across all the other structural features. Some deeply underlying region must therefore have contributed the ores, suggesting that the *sima* or peridotite zone beneath South Africa is, or has been, unusually richly endowed with platinum. J. E. Spurr has already advocated the idea of great *ore canals*, stable throughout geological time, from which igneous magmas have abstracted ores and, ascending in the crust, have concentrated the metals nearer the surface. Dr. Wagner similarly conceives the presence below the platinum belt of a great platinum-rich canal which has provided the material transferred towards the surface by successive igneous intrusions. It is also pointed out that there is an equally remarkable gold province in south-east Africa which may well have drawn its gold from the same canal. It is worthy of notice that if the hypothesis be true in the form in which it is advocated by Spurr and Wagner, it raises a most serious objection to the migration of continents over the substratum that has been envisaged by Wegener, and somewhat differently by Joly. On the other hand, the conception itself is in accord with the inference drawn by Holmes (from the atomic weight of lead) that lead ores must have had some source independent of any later concentration from the magmas of igneous rocks. Another point is that no ore deposits are found in

oceanic islands, suggesting that the continental rocks are more probably the original home of most ores rather than the underlying *sima*. If this be so, then the ore canals may represent concentrations produced in and near the bases of the continents at the time of their origin. If, then, the continents moved laterally in later ages, the canals would be carried with them, and not left beneath and behind as they would otherwise be.

TIDES AND SEA SEICHES.—Tidal features of local coastal origin and sea seiches are discussed by Prof. J. Proudman in a recent *Geophysical Supplement* (vol. 1, No. 6, 1925) of the *Monthly Notices of the Royal Astronomical Society*. The paper is illustrated with many diagrams of cotidal lines relating either to actual regions or typical ideal cases (curved and rectangular capes and bays, circular and elliptic islands, and a passage between two seas). Deductions as to the deformation of the cotidal lines by such local features are made on a mathematical basis, and actual cases of the phenomena are instanced, on the British or Irish coasts. The effect of the neighbouring coast-line on sea-seiches in a narrow bay is also considered.

IRRIGATION IN INDIA.—A review of irrigation in British India during 1924-25 has been published by the Public Works Branch of the Department of Industries and Labour. During the year the monsoon, after beginning weak, was practically normal in total rainfall, and there was appreciable defect only in Orissa and Kashmir, with excess in the western United Provinces, the North-West Frontier, Rajputana, and Malabar. The total area irrigated by works of all kinds was 27.2 million acres, which was about a million acres less than in the record year 1922-23. It is of interest to note that 12.4 per cent. of the total cropped area was irrigated by Government works. The review gives full details of the financial side of irrigation and drainage works during the year.

PRESSURE AND WINDS OVER THE CHINA SEA.—A large-scale atlas of twelve maps showing the mean atmospheric pressure and wind direction and force over the China Sea for each month of the year has been published under the authority of the Governor of Hong-Kong. There is a short introduction by the Director of the Royal Observatory, Hong-Kong. The observations were collected during the years 1900-1912 from ships calling at Hong-Kong, the stations of the Chinese Maritime Customs, and various observatories in the Far East. The observations were originally tabulated in one-degree squares, but this grouping being found unjustifiable except on the main sea routes, they were collected into two-degree squares. Pressures are shown in inches, wind forces are given on the Beaufort scale, and within the wind roses are given the number of barometric observations on which each has been determined and the percentage of calms. The maps extend to lat. 34° N., 8° S., and long. 130° E. They are clearly printed, with land outlines in blue and isobars in red.

X-RAY EXAMINATION OF LONG-CHAIN COMPOUNDS.—In the *Annales de Physique* for July-August, M. Trillat contributes an important paper on the X-ray examination of long-chain compounds, and he gives values for the spacings of fatty acids containing as many as 32 carbon atoms. With the new data at his disposal he shows that the rate of increase in chain length with increase in the number of carbon atoms is slightly different for acids containing odd and even numbers of carbon atoms, although it is uniform in both cases. He also finds that by mounting a thin layer of a fatty acid on a strip of metal, a very fine

film of soap is usually formed immediately in contact with the metal surface. This film is amply sufficient for the purposes of X-ray examination by the reflection method, so that it is unnecessary, in general, to prepare a soap separately for X-ray examination. By examining the changes in the X-ray spectra of oleic, linoleic and linolenic acids in the course of drying in air, Trillat is the first to follow directly a complex chemical reaction by means of X-rays. Attention is directed to the importance of these long-chain compounds in the investigation of very soft X-rays.

THE PHYSICAL PROPERTIES OF GLASSES.—A large amount of information on the above subject is to be found in Prof. W. E. S. Turner's lecture on the relationship of the physical properties of glasses to chemical composition and mode of preparation, delivered before the Chemical Society on April 29, and published in the Society's *Journal* for August last. The preparation of commercial glass involves the fusion of a number of oxides or metallic salts, which may number as many as twelve or more, and the proportions of the constituents largely determine the physical properties. The most important properties are the transmission and absorption of light, the refractive index, the viscosity, the annealing temperature, electrical conductivity, and resistance to the action of water (which is partly a chemical process), thermal expansion and density. In many cases simple relationships are found which make it possible to prepare glasses of approximately known properties by fusing suitable oxides in the requisite proportions. A compromise is necessary in the manufacture of glass for chemical purposes, since the presence of alkaline oxides reduces the resistance to the action of acids. Modern chemical glass ware contains a high percentage of silica, with boric oxide and alumina, and only sufficient alkaline oxides to enable melting to take place fairly readily. The use of a high percentage of silica lowers the resistance of the glass towards alkalis, but the danger of breakage from sudden temperature changes is eliminated on account of its low thermal expansion.

THE USES OF TELLURIUM.—On account of its many industrial applications, tellurium is rapidly becoming of technical importance. Some notes on its uses are contained in a short article in the *Chemical Trade Journal* for September 10, and among the most important are: as a colouring agent in the glass and porcelain industry, in the preparation of organic dye-stuffs, in the manufacture of electrical equipment, high resistance alloys and ultramarine, in the colouring of lithophone and the staining of silver, as a delicate test of sterilisation in bacteriology, and as a toning agent in photography. A compound of tellurium has been patented as an anti-knock constituent of motor fuels, and its use is said to lead to greater efficiency. Remarkable properties are shown by the alloys of tellurium; the tin alloys are extremely hard and have very great tensile strength, the aluminium alloys are very ductile, while the silver alloys have recently been used. The poisonous properties of the element, and its fairly ready absorption (*e.g.* from gold dental stoppings), are not mentioned in the article, but should not be overlooked.

LOW TEMPERATURE CARBONISATION.—The firm of Salerno Ltd., 17 Kingsway, London, W.C.2, has issued a brochure entitled "Low Temperature Carbonisation and the Salerno Process." It contains mainly a survey, sound in substance and temperately worded, of the processes hitherto proposed. The Salerno retort, which is new to Great Britain although tried already in the Sarre mines, is described. It consists of a series of troughs fixed adjacently and parallel and

heated from below. The coal, pre-dried by waste heat, is mechanically propelled from one trough to the other, and the product is delivered in a semi-pulverised condition. High throughput is said to be associated with low capital and running costs. The product is, unfortunately, not fit for immediate domestic consumption, but might be suitable for steam boilers.

PROJECTION OF EXPLOSIVE FLAMES.—In a paper published by the Safety in Mines Research Board (No. 27) Mr. M. J. Burgess has described experiments on the distance over which a methane-air mixture, when exploded in a tube, projects its flame into the air filling a second tube attached to the explosion-tube. When the two tubes were 9 cm. in diameter the projection of flame into the air may be more than five times the length of the original column of explosive mixture. When the aperture between the two tubes is gradually reduced by an adjustable diaphragm, the first effect is an increase in the length of the projected flame—especially with mixtures containing an excess of methane. The experiments show to what a great distance flame may be projected along a gallery when a fire-damp explosion occurs in a mine.

SMOKELESS FUEL FOR POWER.—At the Conference on Smoke Abatement held at Birmingham recently, Mr. A. S. E. Ackermann read a paper on the "Engineering Aspects of the Smokeless Production of Power," a copy of which we have received. The various methods of generating power without smoke production are surveyed briefly. Pulverised fuel firing of steam boilers is favoured on account of high thermal efficiency and absence of smoke. The common view that water-power resources of Great Britain are negligible is contested. It is calculated that 500,000 H.P. might be developed by the erection of efficient installations. The combination of public hot-water supply with power stations is a means of increasing the thermal return of electricity generation. The waste heat from gas retort settings might be utilised to generate current in large quantities. Mention was made of the application to marine and locomotive work of the Still (internal combustion steam) engine, which now is the most efficient prime-mover available.

COAL TREATMENT IN THE UNITED STATES.—In the September number of the *Journal of the Franklin Institute* appears a series of papers on low temperature carbonisation, read at the "Oil and Gas Power Week" Conference at Philadelphia in April last. They reflect the growing concern as to the uncertainty of adequate supplies of mineral oil across the Atlantic. H. W. Brooks gave a general summary of European and American processes, and although unable to point to successful commercial achievement anywhere, he closed on a note of confidence that we are nearing the "Age of Coal Processing." W. H. Blauvelt read another general paper emphasising the desirability of subjecting coal to a process of fractionation and refinement analogous to that of the mineral oil industry. Perhaps the most interesting contribution technically was made by V. Z. Caracristi, who gave an account of experiences with the ingenious lead-bath carbonisation process which has aroused so much interest. This has been given trial by Henry Ford at his motor-works, where no expense has been spared in grappling with the problem of this pioneering effort. To those who speak lightly of the scientific treatment of coal, it may be a revelation to learn that already several million dollars have been spent on experiments on this one process. It is not clear whether commercial success is claimed, but it is stated that the practicability of the lead-bath as a medium for the transfer of heat has been fully demonstrated.