THE late Prof. Augustine Henry, well known as an authority on forestry, was stationed in southern Yunnan as an officer of the Chinese Customs in the last decade of last century. He then made a study of the little-known peoples of the country, including the Lolo, more correctly known as the Nosu. A small collection of clothing which he brought back to England, described as 'Lolo', but now shown to be Miao, was presented to the Manchester Museum by Mrs. Henry. It has since been studied and described by the Misses Laura E. Start and Mabel C. Wright (Notes from the Manchester Museum, No. 37: Repr. Mem. Manchester Lit. and Phil. Soc., 80; 1935-36). The garments consist of four coatsa short-waisted pullover with long sleeves and the chief embroidery at the waist, two linen coats, sleeveless and short-sleeved, with shoulder and collar decoration, and a Chinese derivative, little worn by Miao women-and lastly a short skirt. All differ in technique and style from Chinese work. The description 'Lolo' is shown to be incorrect, as Lolo women wear jackets and long petticoats (which are rarely heavily embroidered) silver ornaments and a long felt cloak. This last is a prominent feature in the clothing of both sexes. The Miaos, who are tenants or serfs of the Lolo, call themselves mp'eo, a sound which means "embroidery". The amount of embroidery on the clothing of a Heh Miao young woman is astonishing; and it takes them years to embroider the jackets or skirts, in which they hope to be married. The embroidery on the garments now in the Manchester Museum, the only ones of their kind in an English museum, clearly indicates their origin. They belonged either to the concubine of a Nosu chief or to serfs on a Nosu estate. The materials used are local cloths made from flax or wool, with trimmings of silk, cotton and wool. Cotton cloth is obtained from the Shan, the only people of the region who now weave cotton. The ornament, hand sewn, is mainly geometric, and well placed. Possibly Chinese influence can be traced; but Shan influence is more marked, for example, in the use of coloured cloths applied in strips and small pieces, in borders, and joined in large pieces to give variety of colour. Two unusual methods employed in making patterns are folding to produce a strip effect, and a stitching giving a brocade texture.

# Mound Builders in Louisiana, U.S.A.

An examination by Mr. Winslow M. Walker in 1931-32 of the remains of a group of mounds in Louisiana has preserved evidence relating to early indigenous culture, which was in danger of being lost entirely. The mounds, upon which now stands the township of Jonesville (formerly Troyville) in Catahoula Parish, near the junction of the Tensas, Black, or Ouachita, and Little Rivers, eighteen miles west of the Mississippi, are thought to be identical with the capital eity of the Province of Anilco visited by de Soto in 1542. They were seen by Duncan and Hunter in 1804. The remarkable feature of the group was then a conical mound raised on a pyramidal platform with two terraces, and there is evidence to show that it had a total height of eighty feet. This would make it second in height only to the Cahokia mound in Illinois. It was partially destroyed in the American Civil War, and finally levelled in 1931, when great sheets of cane, pottery, bones and variously coloured clays were brought to light. The neighbouring mounds have been used for house sites, but enough remained of the great mound beneath the levelled surface to yield to Mr. Walker's excavation something of the cultural history and evidence of the method of construction (Bull. 113, Bureau of American Ethnology). Excavation of part of a burial ground near the river brought to light a number of burials; but there was no certain indication of a connexion between the human remains and the former inhabitants of the mounds. The artefacts found in the remains of the mound were not numerous, the most important being the pottery, which though extremely fragmentary, afforded material for a classification into a number of types. The most remarkable feature was the constructional use of cane in layers of some thickness. There is evidence of at least two periods of occupation or construction, of which the earlier resembles that of the Hopewell Mound builders of Ohio, and the second inaugurated important structural The last inhabitants of the site may changes. have been the Taensa or the Avoyel, both related to the Natchez, who were broken up by the French in the eighteenth century.

#### Inheritance of *l*-Xyloketosuria

THERE are known to be at least two types of the rare chronic pentosuria, differing in the nature of the pentose sugar found, one being optically inactive *dl*-arabinose and the other *l*-xyloketose. The latter-a quite abnormal sugar-is now well authenticated, and a simple new test devised by Lasker and Enklewitz facilitates its identification. The same authors have adduced evidence that dglucuronic acid is the precursor of the pentose, though on theoretical grounds the conversion is difficult to follow from the formulæ of the two At any rate the administration of substances. glucuronic acid causes a greatly increased elimination of this pentose in the urine. What is more interesting is the observation (Human Biology, 8, No. 2; 1936), based on the study of twenty pentosuric families, as to the inheritance of *l*-xyloketosuria. The urine pentose of thirty-seven individual members has been identified as this sugar. The disease is very rare in the general population, but is frequently found in the families of known cases. Most cases are among Jews. The disease was present in children of ten families in which neither parent shows evidence of it. One case was a child of first cousins. These facts are regarded as indicating strongly that I-xyloketosuria is inherited as a recessive character and controlled by a single recessive gene.

### Shore Fauna of the Arctic

THE East Greenland Polar Current bathes the shores of east Greenland in low-temperature water and gives rise to much more severe conditions there than obtain on the west coast. Holger Madsen has surveyed the area 70° 29' N. to 74° 05' N., and finds that life in the littoral and supralittoral zones is limited to comparatively few species ("Investigations on the Shore Fauna of East Greenland with a Survey of the Shores of other Arctic Regions". Medd. Grønland, 100, No. 8; 1936). Fucus vesiculosus, Balanus balanoides, and Littorina saxatilis var. granlandica, all of which occur in the same longitude on the west coast, are absent here, and the common forms are oligochætes, dipteran larvæ, and certain mites and nematodes. The first two may be present in numbers as great as 18,000 and 27,000 per square metre respectively. In the first part of this paper, a detailed account is given of the faunas of the different types of facies-rocky, gravel, clay, etc., and in the second part the area is compared with the west coast of Greenland and with the other known arctic and subarctic shores. The survey of the scattered literature on this subject is of particular value.

## Fishes from West Borneo

Treubia (Deel 15, Aflevering 3; 1936) contains a paper by Dr. J. D. F. Hardenberg (Laboratorium voor het Onderzoek der Zee, Batavia) "On a Collection of Fishes from the Estuary and Lower and Middle Course of the River Kapuas", in which he describes a large number of interesting species, adding many records to the fauna of Borneo. These were to a large extent collected from the fish-market at Pontianak, caught in an affluent of the River Kapuas and on the adjoining coast. Others came from streams connected by numerous water courses with the Kapuas, and from the Peniti River, the last coming from farther up the river and from some of the great lakes near. The author gives notes wherever possible on the various species used as food, their local names and feeding habits besides the morphological descriptions.

# Anatomy of a Nyphomyiid Fly

IN 1932, Mr. M. Tokunaga announced the discovery of a new dipterous insect in Japan, which he described as Nymphomyia alba gen. et sp. nov. It exhibited a combination of peculiar features which led him to establish the family Nymphomyiidæ for its inclusion. He now discusses the nervous, tracheal and digestive systems of this insect (Philippine J. Sci., 59, No. 2, 189; 1936). As regards the nervous system, he describes the ventral nerve cord as consisting of three thoracic and eight abdominal ganglia. The presence of eight separate ganglia in the abdomen is frequent among dipterous larvæ but very rare in the adults of the higher Pterygota. In the tracheal system there are only two pairs of functional spiracles, namely, meso- and metathoracic, while vestigial closed spiracles are present in the abdomen. The tracheal system itself is very simple, consisting of two main longitudinal trunks with very few transverse anastomoses. The alimentary canal is of relatively simple structure : there is no trace of crop or sucking stomach, and histologically the gut shows no evidence of serving a digestive function. The Malpighian tubes are only two in number and open into a common ventral excretory chamber. The structure of the cells of the tubes are peculiar in that small intracellular tubuli open into a common central canal.

## Studies of Frost Hardening

IN a very suggestive investigation upon this subject (Canadian J. Res., 14, Sec. C, Aug. 1936) by J. Levitt and G. W. Scarth, comparisons were made by the plasmolytic method of the permeability of the cells of corresponding tissues of various herbaceous and woody plants in the unhardened and hardened state. Frost hardening of herbaceous seedlings was carried out by keeping them for some days in a cold chamber, in the case of the woody plants ; in addition to twigs thus artificially hardened, comparisons were made with tissues brought in from the open country where they were undergoing the normal seasonal hardening during winter. The result has been to show an unexpectedly definite effect, a marked increase in permeability with hardening. It is concluded that cell permeability in the hardened state shows a better correlation with ability to resist frost than any other character so far examined. The permeability change is most marked towards a salt like potassium nitrate; the change is less marked towards polar non-electrolytes with small molecules such as urea; there is no change towards an apolar substance such as urethane. The authors suggest that these phenomena point to an increase in size of the aqueous pore surface in the plasma membrane as a result of the exposure of the living tissues to cold.

## Hudson Strait Survey

THE sixty-ninth annual report of the Canadian Department of Marine for the fiscal year 1935-36 (Ottawa: J. O. Patenaude, price 25 cents) contains interesting information respecting the exploratory survey work now in hand in connexion with the development of navigation in Hudson Bay to and from the recently established port of Churchill. The principal feature of the season's operations was the charting of a deep-water channel inside the Digges Islands and close to the continental coast, and extending for a distance of twenty-two miles from Wolstenholme to the westernmost islet. It is more than a hundred fathoms in depth and so straight that two courses only are required. The new channel, called Digges Island Sound, is reported as being icefree in the late fall for some ten days after the usual ship's route, north of the Digges Island, and it shortens considerably the distance from the sea to places on the eastern side of Hudson Bay and to Moosonee in James Bay. The newly charted channel possesses a bleak grandeur. At the eastern entrance of the Sound on the mainland side stands Cape Wolstenholme, with perpendicular walls rising a thousand feet from the water's edge. From this great headland, the Sound is walled for several miles by enormous cliffs. Thousands of guillemots and murres come yearly to these cliffs to breed and, in the summer months, the place is alive with their clamour.

## Silting of Reservoirs

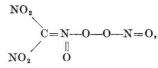
THE problem of the silting of reservoirs by streamcarried material and the means of reducing the process are being widely studied in the United States by the Soil Conservation Service of the Department of Agriculture. The first report dealing with representative reservoirs in the southern areas has been published (Silting of Reservoirs. By H. M. Eakin. Washington, D.C.). The rapid silting would appear to be due to the broad prevalence of soil erosion induced by human occupation. The highest rates go with agriculture: the lowest with forest cover. In other parts, particularly dry areas, silting is accelerated by over-grazing and the consequent reduction of the plant cover. The prevention therefore of this growing menace seems to lie in the control of soil erosion by improved methods of agriculture, reclamation of steep slopes, extension of forest growth, and restriction of over-grazing. Fire prevention and rapid planting of burnt areas are other ways of reducing silting. The report includes full instruction for reservoir sedimentation surveys.

#### Scintillations of Zinc Sulphide

THE scintillations produced on a zinc sulphide screen by  $\alpha$ -particles have served, as is well known, in counting the number of such particles emitted by a radioactive preparation. Various specimens of zinc sulphide have very different activities in this respect, and the suitability is connected with the size of the crystals, the presence of traces of impurities, etc. In a study of the phenomenon, G. Destriau (J. de Chimie Phys., 33, 587; 1936) has indicated some further interesting features. The sensitivity of a specimen of zinc sulphide to  $\alpha$ -rays is not connected with the phosphorescent properties in relation to light, since a sulphide which is phosphorescent can give no scintillations, and vice versa. The fluorescence under X-rays, on the other hand, is closely related to the brightness of the scintillations. It was possible to produce luminescence in zinc sulphide by the action of an electric field.

#### Constitution of Tetranitromethane

THE constitution of the compound  $C(NO_2)_4$  has recently engaged the attention of the Czechoslovak chemists, Prof. Cyrill Krauz and Dr. J. M. Štěpánek (*Chem. Obzor.*, 11, 153 and 177; 1936). These authors conclude that none of the structural formulæ previously assigned to tetranitromethane (TNM) fully explains its chemical reactions. Not one, for example, explains its oxidizing properties. The substance can scarcely be regarded as a true tetranitro-compound since one nitro-group is more reactive than the others, and a new structure is suggested, namely:



which accounts for the formation of nitroform as an intermediate and as a decomposition product. Tetranitromethane acts most strongly as an oxidizing agent in alcoholic solution. A peroxide hydrogen atom is given up in the presence of such reducing agents as sulphides, sulphites, arsenites, hydrazine and hydroquinone, with the liberation of nitroform. Iodine is set free from iodides not only in the presence of acids but also in neutral and even weakly alkaline solutions. The above formula also indicates how guanidine, methylamine, ammonia and nitrogen can be derived from tetranitromethane, and its formation by the interaction of silver nitrite and iodonitroform is at once apparent. The compound is not decomposed by anhydrous sulphuric acid or by glacial acetic acid, and the authors obtained no evolution of gas in Lunge's nitrometer on treating tetranitromethane with concentrated sulphuric acid, although with the dilute acid the decomposition became very violent.

#### Electrical Prospecting and its Uses

IN a paper presented at the Second Congress of the International Commission on Large Dams at Washington on September 10, C. and M. Schlumberger show how to utilize the fact that underground formations differ largely in their electrical resistivity. The electrical current conducted by rocks varies largely with the amount of assimilated water they contain. Rocks like granite, gneiss, marble and all rocks in which the spaces of pores form only a very small fraction of the total volume have a resistivity varying between 200 and 3,000 ohms per cubic metre; for clays, marls, soft limestones, etc., it varies from 10 to 30 ohms. The large differences between the resistivities show that they can be usefully employed to foretell the nature of the foundations on given sites. Since the measurements made are at small depth, the necessary equipment is very light and easily handled. It consists of a potentiometer, a few dry-cell batteries, two reels of cable and copper pegs to make the earth If it is required to find the exact depth contacts. of the bedrock by an electrical sounding, an average of about four measurements per day can be made, but even so the cost is very small when compared to that of mechanical drilling. When a large surface has to be surveyed to determine a suitable site the technique is different, and an efficient operator can make about forty measurements per day, a different method being employed. The results obtained in four practical applications are given : one in France, two in the United States and one in Canada. In predicting the depth of the bedrock in one case, the maximum error made was nine per cent and the average error 6.4 per cent. A translation of the paper, which is in French, is given in World Power of September.

## Discrete Space-Time

In the course of five lectures delivered in the McLennan Laboratory of the University of Toronto in January and February 1936, and published in pamphlet form (University of Toronto Studies, Physics Series; University of Toronto Press, 1936), Dr. L. Silberstein examined some of the consequences of the hypothesis that both space and time are discrete instead of being continuous. This would imply, for example, that in any finite volume the number of positions that a particle could occupy would be, although very large, not actually infinite, and that in describing its motion all that could be specified would be its position at very short intervals of time, as in a cinematograph film. Such an assumption has much in common with the postulates of quantum theory. Dr. Silberstein shows that discrete spacetime is compatible with the restricted relativity theory, at least to a high degree of approximation. But, as no place is left for infinitesimals and hence for covariant tensors, the general or gravitational theory is ruled out. To the ordinary physicist this seems regrettable; but Dr. Silberstein, for reasons not explained, declares that "the generalized relativity theory is far from being firmly established, and its heuristic power, its successful predictions (of which one, that relating to the perihelion motion of Mercury, seems very doubtful) seem to be nearing exhaustion, while certain rigorous conclusions recently drawn from Einstein's general-relativistic theory of gravitation by the writer turn out to disagree with some most fundamental facts of experience".