Research Items

New Guinea Pygmies

AMONG the more interesting results of Lord Moyne's expedition to New Guinea, from which the collections are now on exhibition at 10 Grosvenor Place, London, S.W.1 (see NATURE, May 30, p. 898) is the confirmation of rumours as to the existence of a hitherto unrecorded group of pygmies inhabiting the Aiome foothills of the Middle Ramu region between Atemble (about seventy miles from the mouth of the Ramu) and Mount Hagen. Some further particulars of the information relating to this group obtained by Lord Moyne are given by Mr. H. J. Braunholtz in *Man* of June. The members of the expedition were not allowed to enter the villages of the pygmies, as they are 'uncontrolled'; but about twenty-five of the pygmies visited the expedition for trade. Twelve males who were measured averaged 54½ in. (1·385 m.) in stature and three females 51½ in. (1·31 m.). The extremes ranged from 52 in. to 57 in and 50½ in. and 53 in. respectively. They were light brown in colour, of about the same shade as light-skinned Polynesians. Mr. Braunholtz points out that these are the lowest figures yet recorded for any pygmy group in New Guinea, and are about equal to those of the pygmies of the Congo. The Tapiro of the Mimika average 57 in., while the next group averages 58½ in., a fact which led H. J. T. Bijlmer in his report on the physical anthropology of New Guinea to question whether there is a pygmy race there at all, regarding these low-statured peoples as local variants of the variable Papuan stock. The Aiome group is, therefore, a new fact of outstanding importance. Several complete pygmy equipments were obtained, a typical outfit including: a bow, three arrows with wide bamboo blades for pig, one four-pronged arrow for birds, four barbed arrows for fighting, two plain pointed arrows; a small round shield slung on the left side in net bag, bone dagger, bamboo louse scratcher with wallaby fur puff, belt of plaited vine, neck pendants of various teeth and seeds, head-dress of bark-cloth, garters and arm bands, pubic covering of bark, pandanus mat for rain.

Wappo Ethnography

THE Wappo Indians, of whom the modern representatives live on the reservation near Geyserville, California, according to investigations by Mr. Harold E. Driver, who visited them in July 1932 (*Univ. California Pub. American Archæol. and Ethnol.*, 36, No. 3), are possibly very nearly the most primitive people of whom there is record. The land on which they live, now occupied chiefly by Pomo families, was originally Wappo. Their country was a small territory fifty miles long and fifteen to twenty miles wide north of San Francisco Bay. They inhabited the fertile valleys of a hilly country. They were without writing, metals, agriculture, pottery or domestic animals, even dogs. Their chief food was the acorn, eaten in the form of mush. Small game furnished more of their diet than big game, though deer meat was an important food. They did not hesitate to eat rats, mice, grasshoppers, snails and the like. Homes were mostly of grass-thatch and could be constructed in a day or two. Dress was the minimum, the men being nude and the women wearing a double apron. In cold weather a skin, or woven tule cloak, was worn. The only art of any note was basketry, in which they excelled. In variety of size, shape, weave and quality of workmanship, it rivalled the famous Pomo baskets. In social organisation, they were without clans, real chiefs or definite tribal unity. The social unit was the bilateral kin, with the whole town or village community as the larger unit, numbering at most two or three hundred, but usually about one hundred persons. There was no central authority binding these units together. There was a lack of any far-reaching division of labour; arrow-head makers and clamshell bead makers being the only tradesmen giving their time to special tasks. Their only records were bundles of sticks, mnemonic devices to mark the moons and a few dates in the future. At the birth of a child the custom of couvade was observed by the father, strictly for four days and afterwards with lessening intensity.

South Wales Oysters

THE report on investigations into the condition of certain of the oyster beds in the South Wales sea fisheries district (June 1934) (*Fish. Invest.*, Series 11, 14, No. 5; 1935) by F. S. Wright shows good results following experimental work during recent years in order to increase the local oyster population. Especially in the Roads Haul near Mumbles Head, where adult oysters were laid down close together in a reservation in order to breed, were good spat-falls obtained, and it is suggested that work on the same lines be continued in this area. Free-swimming larvæ derived from oysters in the Roads Haul stand an unusually good chance of being transported by currents to adjacent banks which are favourable for their development. In Milford Haven, some Portuguese oysters were laid down, but it is suggested that this be discontinued in view of the fact that indigenous oysters are now available in the district, and restocking should be carried on with this species. The importance of restoring the natural oyster beds is becoming more and more recognised, and the present report is distinctly encouraging.

A New Tomato Eelworm

A SHORT account by Mr. P. H. Williams (*Gardeners' Chron.*, May 16, 1936) announces the appearance of a new gall-forming disease of the tomato. The galls appear on the stem of an affected plant, are spongy in texture, and are caused by *Anguillulina dipsaci*, an eelworm which attacks a wide variety of plants. The disease has been reproduced upon healthy tomatoes by spraying with a suspension of eggs and living eelworms. Fortunately, the malady is quite rare.

Dimorphous Basidiospores

MR. E. J. H. CORNER has studied two species of fungi, *Hygrophorus firmus* and *H. hypohæmactus*, and finds that they produce two kinds of basidiospores. Large spores with dense contents are borne upon large basidia, whilst small vacuolated spores occur

on small basidia ("*Hygrophorus* with Dimorphous Basidiospores"; *Trans. Brit. Mycol. Soc.*, **20**, Pt. 2, 157–184, January 1936). The paper also contains a full account of a detailed microscopic study relating to the development of the fruit body. *H. hypohœmactus* is described for the first time, and Mr. Corner shows, by the description of sixteen varieties, juvenile forms and overgrowths, that *H. firmus* is an extremely variable species.

Camomile Lawns

THE modern concept of a lawn can scarcely be associated with any other kind of plant than grass, but in the days before the invention of the lawn mower, broad-leaved herbaceous plants were of frequent occurrence in any well-established sward. Mr. R. B. Dawson, director of the Golf Green Research Station at St. Ives, Bingley, Yorks, discusses the potentialities of camomile (*Anthemis nobilis*) as a lawn plant (*J. Board of Greenkeeping Res.*, **4**, No. 14). He has examined a number of lawns in the Royal gardens where camomile is established, and finds that this species is an aggressive coloniser, and very tolerant of drought. Its densely-woven runners supported a mat of deep green foliage when the surrounding grass was parched and dry; it was free from weeds, and gave a fragrant turf. In spite of these advantages, however, it seems unlikely that the plant will be suitable for the closely-mown lawns demanded by modern conditions, and there is a possibility that the resistance to drought would diminish if too many leaves were removed by keen cutting.

Plant Cover as Protection against Soil Erosion

THIS topic is dealt with very fully by Mr. J. Kramer and Prof. J. E. Weaver of the University of Nebraska, in Bulletin 12 of the Conservation Department of the University, recently published. The controlling of wastage of land through soil erosion is one of the major economic problems in America, and was brought forcibly into the public interest by the great dust storms of 1935. The authors have standardised a technique in which undisturbed samples of field soil of reasonable size can be lifted, with the crops they bear uninjured, and then exposed to erosion by a stream of water directed on to the surface from a hydrant. Numerous data obtained by these methods are assembled and discussed, but the striking general result is the very great protection against rain erosion provided by the above-ground portions of the plant compared with the root system alone. The authors conclude that the character of the crop is a principal factor in erosion control, the effect with plant cover intact exceeding that of underground parts alone from 3 to 7 times. Maximum protection was afforded by winter wheat and sorgo; oats and alfalfa were less effective. Among pasture plants, well-established Hungarian brome grass was found most effective. The authors naturally conclude that the weakening of grasses by over-grazing, trampling and injudicious burning may contribute materially to soil erosion.

Surveys in Central Asia

A SUMMARY of the state of surveys in Chinese Central Asia including Tibet and Sinkiang is shown on a map produced by the Survey of India and republished in the current volume of the *Himalayan Journal* (**8**, 1935). The whole of the Himalayas except in parts of Bhutan and Assam are covered at least by exploratory surveys, though some of the work at altitudes above 15,000 feet is still rough. About one quarter of Tibet is now covered by exploratory surveys, and several other parts have a network of explorers' routes; but large areas still remain of which little is known. In those parts early travellers and 'pundit' explorers are the only authorities. In Sinkiang, exploratory surveys seem to cover nearly half the area, and they are almost entirely due to Sir Aurel Stein and his Indian assistants.

Analysis of a Tropical Hurricane

THE *Monthly Weather Review* of November 1935 contains two papers dealing with the remarkable tropical hurricane that visited the Atlantic coast of the United States early in that month. The first paper, by Willis E. Hurd, gives a detailed account of the life-history of the storm, which apparently began as a feeble disturbance outside the tropics—a very unusual event—a little east of Bermuda in lat. 32° N., on October 30. It moved west by north, passing just north of Bermuda, but turned unexpectedly south-westwards during the night of November 1–2, then almost south on November 2, crossed the northern fringe of the Bahamas on November 3 and the lower part of the Florida peninsula on November 4. In the Gulf of Mexico it described part of a loop that brought it back to the neighbourhood of Florida, where it dissipated on November 8. In addition to the extraordinary nature of the track, it is the first storm on record to develop hurricane winds in the Florida peninsula so late in the season. The hurricane winds covered only a narrow track, but they did damage estimated at five and a half million dollars in and around Miami. The rainfall at Miami was very eccentric—0·24 in. before the arrival of the fifteen mile wide calm centre and 3·80 in. afterwards. The storm was not circular, and had some characteristics more appropriate to extra-tropical cyclones. It did not cause any very abnormal tides. The second paper, by H. R. Byers, is an attempt to relate the development of the storm to the different polar and tropical air masses present over the Atlantic at about the time of its formation. Charts are shown on which the various fronts are depicted, and a cross-section of the atmosphere from Omaha to Washington based on upper air soundings. Upper air conditions were also examined with the view of explaining the change of movement of the storm centre during the night of November 1–2; an isobaric chart for a height of 3,000 metres showed a distribution of pressure favourable for strong northerly winds, and it is concluded that these carried the centre southwards. The decay of the system set in when dry westerly winds at high levels spread gradually down to sea-level.

Thermostats

No. 276 of the series "Actualités scientifiques et industrielles" (Paris: Hermann et Cie., 15 francs) is entitled "Les Thermostats pour les Temperatures moyennes" and is written by Dr. André Lalande. It deals in a more general manner than has been previously attempted with the conditions which make for the efficient operation of thermostats of all types, including those which depend on mercury triode valves. References to more than seventy regulators are given.

Infra-red Sensitisers

THE effect on the sensitising properties of the cyanine dyestuffs of introducing various atoms or radicals in different parts of the cyanine molecule is of considerable interest for the possible extension of photography into the infra-red region. In a recent paper, A. Corbellini and R. Fusco (*Rendiconti del Reale Istituto Lombardo di Scienze e Lettere*, **68**, 961; 1935) describe the preparation of a number of tricarbocyanines in which one of the hydrogen atoms in the seven-membered CH ring is replaced by halogen atoms. The α-halogen derivatives of glutaconaldehydedianilide hydrochloride were condensed with various heterocyclic nuclei, namely, the ethiodides of quinaldine, β-naphthoquinaldine, α-methylbenzthiazole, and methyl-α-naphthathiazole. The resulting tricarbocyanines all absorb and act as sensitisers in the infra-red, but the presence of the halogen atom in the CH chain does not influence the sensitising power.

Radiations from Sodium and Mercury Vapour Lamps

WE welcome the first two numbers of *Philips Technical Review* published in English by the well-known Philips' lamp factory at Eindhoven in Holland, which is affiliated with Philips Lamps Ltd., of 145 Charing Cross Road, London. It deals with technical problems relating to the products, processes and investigations carried out by this firm, and judging by the early numbers it should be of value and interest to the whole engineering profession. A paper compiled by G. Heller in the first number describes how the visible radiations from sodium and mercury vapour lamps are generated. The processes in the two cases are entirely different. Sodium is excited by the impact of electrically accelerated electrons against atoms in their normal state. In general, the efficiency in light production of the sodium vapour is higher, the lower the vapour pressure, the current density and the luminous intensity. In high-pressure vapour lamps, on the other hand, the radiation is produced by the temperature of the mercury vapour. Unlike the sodium vapour lamp, the efficiency diminishes with the vapour pressure, the current density and the luminous intensity. The characteristics of a sodium tube lamp of 100 watts are compared with those of a super high-pressure mercury lamp of 1,400 watts. The sodium lamp is surrounded by a double-walled vacuum flask which diminishes heat conduction, but in the mercury lamp the vapour discharge is cooled by running water. The mercury molecules give a spectrum composed of wide bands instead of sharply defined lines. The light output of sodium and mercury lamps will be discussed further in a later issue.

Acoustics of Telephony

THE transmission of speech over a distance involves problems of both an acoustical and an electrical nature. Normally there is but one medium, the air, between the speaker and the listener; but in order to carry the energy to a distance, the telephone engineer interposes an electrical system between the two. A brief survey, in popular language, of the acoustical characteristics of the two ends of such a telephone system forms the subject of the most recently issued of the Post Office Green Papers (No. 25). This pamphlet, entitled "Acoustics of Telephony", has been prepared by Dr. E. G. Richardson. It commences with an illustrated description of the human ear and the manner in which the voice operates to produce the sounds of ordinary speech, a circuit diagram being given of an electrical analogue of this voice. A cathode ray oscillograph equipment for the recording of speech wave-forms is described, and some typical oscillograms of vowel sounds by various speakers are shown. The importance of obtaining freedom from interference in ordinary telephony is noticed, and reference is made to the sound-absorbing properties of various materials and the principles of sound-proofing systems, such as the ordinary telephone kiosk. This interesting publication should do a good deal in directing public attention to the important progress which technical acoustics has made in recent years in connexion with the development of communications engineering.

Telluric Acids

M. PATRY (*Bull. Soc. Chim.*, **3**, 845; 1936) finds that orthotelluric acid, $Te(OH)_6$, is stable below 100°; between 100° and 220° metatelluric acid, H_2TeO_4, is formed. The reaction is complete in a few minutes at 200°. This loses water to form the trioxide, TeO_3, above 220°, and above 395° the trioxide decomposes into the dioxide, TeO_2. Complicated results are obtained by heating orthotelluric acid in a sealed tube. Mylius found that the acid fused at 136° in such circumstances and was converted into a soluble so-called allotelluric acid, $(H_2TeO_4)_n$. Metatelluric acid is a white amorphous hygroscopic powder, very slowly soluble in water. Tellurium trioxide is an orange yellow, non-hygroscopic powder, insoluble in water. Allotelluric acid is a viscous mass, soluble in water. It is now shown to be a mixture containing one constituent to which it owes its peculiar properties. A large proportion, unlike orthotelluric acid, is soluble in cold alcohol or nitric acid, and this part is regarded as pure allotelluric acid. In the sealed tube experiment, a grey, hard form of the trioxide, called $TeO_3(\beta)$, is formed on prolonged heating. Allotelluric acid in solution passes into orthotelluric acid; the change can be followed by the electrical conductivity.

Optically Active Disaccharides

AMONG the carbohydrates, many examples of optical antipodes have been prepared in the monosaccharide series and in the simple glycosides of the monosaccharides. Optical antipodes among the disaccharides are theoretically possible, but were not previously described. L. C. Kreider and W. L. Evans (*J. Amer. Chem. Soc.*, **58**, 797; 1936) have now prepared such antipodes, their work being based on the following principle. If a molecule of the optically inactive keto-triose, dihydroxyacetone, could be joined in true biosidic linkage with a molecule of the *d*-form of an optically active monose, a true optically active disaccharide would result. Then if dihydroxyacetone could be joined in the same manner to the *l*-form of the same optically active monose, a second optically active disaccharide would be formed which should be the exact optical antipode of the first. This has been achieved with *d*-arabinose and *l*-xylose as the monosaccharides. The compounds β-*d*-arabinosidodihydroxyacetone tetraacetate and the corresponding β-*l*-compound, β-*d*-xylosidodihydroxyacetone tetraacetate and the corresponding β-*l*-compound, and β-acetobromo-*l*-xylose, were prepared. These contain examples of the first disaccharide to have a pentose and a triose as its constituent parts and the first examples of pairs of synthetic optical antipodes among disaccharides; the first disaccharide racemate was demonstrated in the case of β-*dl*-arabinosidodihydroxyacetone tetraacetate.