

and several sites have been examined, including three stone circles, a megalithic tomb, and a series of dwelling sites. The excavations have been carried out under the direction of Prof. Seán P. O'Riordain of the University of Cork. The principal site excavated in 1939 was a large and exceedingly well-preserved stone circle on the western side of the lake, near the Bruff-Limerick road. Not only is this the best known prehistoric monument of the Lough Gur, but it is also said to be the finest stone circle in Ireland. It is built of large stones backed up by a huge bank of earth, and encloses a level, open internal space 155 ft. in diameter.

Here important finds of pottery were made, of which some afford evidence for a new chapter in Irish archaeology. A reconstructed vessel proved to be a 'beaker', the first of its kind to be found in Ireland. It belongs to the class of ceramic characteristic of the 'Beaker Folk', who reached Britain in the late neolithic or Early Bronze ages, but, it has been thought hitherto, did not reach Ireland. A further discovery of considerable interest is that of neolithic pottery of types found only sporadically in Ireland, except in the north-east. On the evidence of the finds, the circle is dated at approximately 1700 B.C., and its ritual purpose, that of a prehistoric temple, is regarded as definitely determined. In a group of neolithic houses on the peninsula of Knockadon in Lough Gur, one, exceptionally well-constructed, is said to be the earliest house yet found in Ireland. It is 32 ft. long by 18 ft. wide. The lower part of the walls is of stone, the superstructure of wood and thatch—a type well known from various periods in northern Europe.

Landscape Meteorology

MR. L. C. W. BONACINA'S paper entitled "Landscape Meteorology and its Reflection in Art and Literature" (*Quart. J. Roy. Meteor. Soc.*, 65, No. 282; October 1939) is a detailed study of the scenic aspect of clouds and weather, and an example of that co-operation between science and art which is one of the most interesting developments of culture during recent years. We welcome particularly the author's dictum that it is a mistake for the man of science to regard scenic values as altogether outside his province. It is equally to the point that the landscape artist will find additional enjoyment, and possibly also increased efficiency, if he studies the physics of meteorological effects. The later part of the paper is mainly devoted to descriptions of local and seasonal phenomena. One outstanding example is that of the night sky as seen from the high plateau of Bolivia, where the general aspect of the constellations is that of coloured stars.

Valuable as is this elaborate paper, the reader cannot help feeling how great is the difficulty of bringing the artistic and scientific aspects of a subject into one essay. The perceptive and reflective moods are alternate, and the literary technique for their simultaneous treatment has not been fully mastered. Indeed, we do not yet know if it can be mastered. If so, it will be by Ruskin re-incarnate in

the world of to-day, with the same faculties of sight and expression but imbued with the culture of the present time.

Malnutrition in South Africa

AN informative survey of the state of nutrition of the peoples of South Africa is given by Ellen Radloff and T. W. B. Osborn in a pamphlet with the above title (Johannesburg: The Witwatersrand University Press, 1939. 2s.). South Africa has been spoken of as the most prosperous country in the world, which is a true statement for a minority of the European section. But South Africa is also a country of poor whites and poorer blacks, which is true for several millions of non-Europeans and several hundred thousands of Europeans. The principal dietary essentials for proper nutrition are discussed, with descriptions of the conditions that result when these are deficient. Tables are given of the vitamin content of common foodstuffs and of typical South African diets.

The basic ration scale recommended for adult Europeans at the Health Department's institutions appears to be ample and adequate, and is in striking contrast to the daily diet scale for adult native paupers in Cape Province, which consists of 1 oz. of fat (not butter) and 24 oz. of mealies. Remedies are suggested for the malnutrition that exists, which include improvement of the economic condition of the people, educating them to buy meat, milk, fruit and vegetables, and in rural communities providing more land for them to buy and improving their grade of cattle. A direct pharmacological approach to the question is also suggested by providing rations of essential salts and vitamins.

Underground—and the City of the Future

IN the *Beama* journal of November reference is made to Le Corbusier's city of the future consisting of dwellings, offices, and factories contained in huge blocks separated by gardens. One of the main features of this modern city is the large part of its activity which takes place underground. Power stations, garages, warehouses and other public service buildings, as well as traffic routes for vehicles and pedestrians, would be constructed in this way. Already there exists a plan for the diversion of a large part of the Paris traffic, the underground routes for which were examined by the Minister of Public Works some years ago. *Électricité* published a report on this subject by M. Roger d'Arboville, professor of applied electricity in the well-known *École spéciale d'Architecture*, on the lighting of underground traffic and pedestrian routes. He reviews the practice exemplified in some of the short subways in Paris, in the long road tunnel projected for 1941 under the Meuse, the mile-long roadway under the Eiseaut at Antwerp and various railway tunnels in France and England.

M. d'Arboville discusses the question of the lighting of underground road tunnels both in actual road tunnels and in many tunnels which are projected. The ever-increasing density and speed of

road traffic make this question of great importance, especially at the entrances to the tunnels. The light conditions at these places must be very carefully graded or else the speed of all transport entering the tunnel must be heavily stepped down. The latter course is objectionable as it interferes with the normal flow over a wide area. He suggests that photo-electric cells might be used to maintain the lighting more constant and so overcome the changing variations of natural light. The photo-cells should be directed towards the ground, since otherwise the effect of sunlight variations is too strong.

Dismantling an Old Colliery

WE learn from an article in *Roads and Road Construction* of December 1 that the famous Cymmer Colliery at Porth, Glam., from which coal has been raised for more than a hundred years, has recently ceased work. The immense quantity of plant which it contains is to be dismantled and made available for use either in the coal industry or in similar industries engaged on contracts of national importance. In the history of this colliery, which once employed more than three thousand men and produced more than three thousand tons of coal a day, an interesting story is told of how about fifty years ago, whilst boring in the shaft for piping supports, the men struck what is called a 'gas blower', which is a sort of pocket of free gas. In these days men were permitted to take naked lights down in the cage with them so that they could heat their tea, and one of these lights ignited the natural gas. As it was dangerous to allow such gas to escape into the shaft, a two-inch pipe was installed to conduct it to the surface. Here it has been burning for fifty years without being extinguished. Measurements show that approximately 650 cub. ft. per hour was being emitted at the 'blow'. The gas is chiefly methane, and arrangements have now been made to 'bottle' it in steel cylinders at about 800 lb. per sq. in. pressure for scientific and industrial use.

Messrs. George Cohen of London and Swansea are at the present time running a 5,000 cub. ft. vertical engine-driven compressor now in the mine to supply air to the haulages for removing the underground plant and machinery, of which there is no less than 4,000 tons, including about 1,200 tons of pit rails. Compressed air was also supplied below for working coal-cutters, jigger conveyors, belt conveyors, and turbine fans. Electric light, both for underground and surface, is supplied by steam-driven generating sets. In 1933 a modern dry coal cleaning plant of 75 tons per hour capacity was installed at a cost of about £20,000 by the Birtley Iron Co. The roads to the pit are in excellent condition, being supported by about 1,700 tons of steel arches, of which Messrs. Cohen expect to recover about 500 tons.

Hydro-Electric Development in India

RECENT reports from India, referred to in *Beama* of November, state that a very large irrigation scheme which will include the generation of large quantities of electric power between the Punjab and

the State of Bilaspur is under construction. The volume of water that will be impounded is three times as large as that of the Aswan dam across the Nile. A further scheme for the development of water power utilizes the high run-off of the monsoon rains from the High Range Hills to the plain at Travancore in southern India. Power is obtained from the Munnar River as it descends in a series of cascades from the hills. The monsoon waters are impounded in storage reservoirs built on natural sites. The power station is built on the banks of the river, with the tail-race planned to discharge into it. Above stream, the river water is decanted by a weir, then passes through a channel to the tunnel and forebay. From there it is carried in a 10,000 ft. long tunnel—an open channel was impracticable owing to the crumbling nature of the surface rock—to the surge tower. Two parallel pipe-lines connect with the power house, each supplying water to a 6,000 brake horse-power turbine.

Weather by Telephone in New York

ACCORDING to the *Bell Laboratories Record* of November, the New York Telephone Co. inaugurated a new service last April. It is now possible in the Metropolitan area to dial 'weather', and hear the latest weather prediction, including the anticipated temperature, winds, and rain or snow conditions. The bulletins are based on direct teletype reports from the United States Weather Bureau; at present these reports are changed hourly between seven in the morning and eleven at night. When important changes occur, special bulletins may also be given. All the equipment used for this service is installed in the West Fiftieth Street Central Office building, and weather announcing trunk lines are run to all the central offices in Manhattan, while other parts of the metropolitan area reach the announcing bureau through subcentres or tandem offices. In the time-announcing system a special operator makes each announcement herself. In the weather system use is made of a recorder using magnetic tape. It is well suited for this service as it is necessary to change the recorded message frequently and permanent preservation of the record is of no importance.

The record is made in the usual way by producing, in a moving steel tape, a magnetic pattern corresponding to the voice current coming from the microphone circuit. This pattern remains in the tape and can be 'picked up' electrically many thousands of times before being erased. This is done by saturating the tape with a strong magnetic field. The entire process of erasing, recording a new message and reproducing is controlled by a few keys in the operating turret. No experience or technique is required to obtain exact reproduction of the announcement, and since the steel tape can be used again and again indefinitely, there is no continuing expense for record material and no processing cost involved. Three of these machines are used. The tape machine employs slightly more than 40 ft. of tape wound on three brass drums. The two ends of the tape are electrically welded so that it forms a single tape loop.