

mentally ill and received hospital treatment but who have now returned to live in the community. The Department of Psychological Medicine, University of Edinburgh, has been granted £15,725 over three years to develop a psychiatric treatment service for alcoholics, while £100,000 has been reserved for the development of a health centre at Witney, near Oxford: "All the general practitioners of the town will practise from surgeries in the centre, which will also provide accommodation for local health authority and dental clinics and consultant outpatient clinics, as well as X-ray and pathological facilities run by the Oxford Regional Hospital Board."

A further allocation of £92,250 has been made to the Hospital Engineering Unit at the University of Glasgow to undertake a programme of research work concerning problems met in heating, ventilating and air-conditioning of hospitals, including the means of attaining proper standards of performance. Much of the practical work will be carried out in an experimental ward unit which the Scottish Home and Health Department has built at

Hairmyres Hospital, East Kilbride, Glasgow, but research will also be carried out at other hospitals. Another project concerning the physical problems of hospital design involves the allocation of £15,000 to the United Oxford Hospitals and the Oxford Regional Hospital Board jointly to enable a special unit to be built at the Churchill Hospital, Oxford, in which experiments can be conducted into the lay-out of wards and departments and where equipment and procedures can be tested.

£35,000 has been ear-marked for an experimental intensive-care unit which has now been opened at Broadgreen Hospital, Liverpool. The report comments that the successes claimed for progressive patient care in the United States have won adherents in Britain for the persuasive principles involved. However, there has been little practical experience of the system or of any of its stages in Britain, although experiments and investigations in the care of acutely ill patients, and management of post-operative cases, have always been a feature of Britain's hospitals.

SMOKELESS AIR

THE autumn issue of the quarterly *Journal of the National Society for Clean Air* (35, No. 131; 1964, London) opens with some appropriate lines: "Ships, towers, domes, theatres and temples lie Open unto the fields, and to the sky; All bright and glittering in the smokeless air". This obviously epitomizes the aims of this organization, which have to-day become a matter of international concern.

Only a few decades ago the United Kingdom and the United States were the only countries actively organized to combat air pollution in big industrial cities, where the problem of contamination of the air breathed, in its progressively toxic aspects, had become a matter of both general and medical concern. "Today we find organization, investigation, research and legislation in many countries and in every continent . . . the natural result of the tide of industrialization flowing from the North Atlantic countries to almost every corner of the globe."

Progress of the movement since the early pioneer days is clearly revealed in the current number of the *Journal*, which contains a full first-hand report of the Council of Europe's Clean Air Conference at Strasbourg (June-July 1964). This has been described as the most comprehensive and longest event ever held on the problems of air pollution. Just previously, on the initiative of the Air Pollution Control Association of America, with the help of the U.S. Public Health Service, a meeting of six national air pollution organizations, including the United Kingdom, was convened and held at Washington, June 1964. The Strasbourg conference revealed not only what 14 member countries (including observers from the United States)

had in common in air pollution problems, how different national situations determined procedure but, equally, despite the impracticable measure of uniformity in law and administration, the strong desire towards what is modestly described as 'harmonization' of mutual activities.

Fundamentally, at least in some parts of the United Kingdom, probably just as pertinent overseas, much depends on the availability and price of smokeless fuels, especially for domestic consumption; the position is not satisfactory at the present time, taking an overall survey, on either count. But air pollution is not only a question of utilization of smokeless solid fuel. As is well known, the Ministry of Transport in Britain has for some time been conducting a drive against smoke emitted by incorrectly maintained Diesel-engined vehicles using our public highways. The much-publicized national checks on some of the worst offenders have already had a disciplinary value, but, as another article in the *Journal* points out, the policy advocated by the Society is: ". . . that offenders should be required to put their vehicles in good order and that they should be prohibited from operating until this was done. This . . . is a better and more certain incentive to good practice than purely punitive measures".

Smokeless air, even better, pure air, as an environment in which both to live and to work, may be an ideal, perhaps unattainable in heavily built-up and industrialized areas, but at least the problem is a live one in most civilized countries to-day, and the organization responsible for this publication is doing great service in co-ordinating the efforts of everyone concerned in reaching the ultimate goal in Britain.

TRANSPLANTING MATURE DATE PALMS IN IRAQ

THERE is nothing very unusual nowadays in the transplanting of large trees for particular purposes. It is done in towns where the immediate effect of a large tree is required for amenity reasons and to save the wastage and delay in time brought about by the vandalism to which young trees are sometimes subjected in urban areas. So long as the special equipment is available, and the expense can be met, the operation has justified itself in the success it has had in temperate climates where advantage is taken of the dormant season of the trees, but it is a

different matter in a hot climate where the rate of transpiration is one of the factors increasing the difficulty of the operation.

Mr. R. H. Nocton, an agronomist specializing in tropical agriculture, has recently prepared a paper describing the transplanting of 87 mature date palms in Iraq. The site was the New University of Baghdad and the trees ranged from 30 to 60 ft. in height. The operation was completely successful, and the following points are of particular interest.

The soil was alluvial to a depth of about 30 ft., fine textured and grading into sub-soil sand. This provided a good transplanting medium because water-holding capacity is better with fine-textured soils. From the nutrient point of view there were various difficulties such as the alkaline nature of the soil, pH 8-8.5, which tends to restrict the availability of certain nutrients to the trees and also the deficiency of important elements and the absence of nitrogen. Salinization of the lower root zone occurred, but this is known not to represent a serious factor where irrigation is practised. The climate made transplanting difficult because Iraq is tropical, with very hot summers, and always dry.

It is necessary to ensure the same orientation of the tree in the new site—especially the older the tree—and so a metal disk was nailed to the north side of the bole. Transpiration was arrested by pruning off the fronds to leave 6-8 per tree which were sprayed with water-dispersible plastic. Likewise, the root ends which were exposed on digging were sealed with plastic and the large bowl of earth, some 6 ft. in radius at the surface and about 7½ ft. deep, was covered with hessian during transportation. The tree with its bowl, a total of from 14 to 38 tons, was lifted by crane and moved to the new site in an upright position on a low loader. Planting took place 3-6 ft.

deeper than normal to ensure stability and to promote the growth of roots. The hole was filled to within 2 ft. of the top and the space kept full of water for a month. Surface irrigation was undertaken and, although the Tigris is slightly saline, this did not matter because the major part of the irrigation occurred when the river was at its highest and the salt content was at its lowest level. In order to create a microclimate under the trees, a sprinkler irrigation system was used which not only increased the humidity from 18 to 80 per cent but also promoted root growth. New roots were produced on some trees two months after transplanting and a growth regulator was applied to any tree not showing new roots after three months.

The success of the experiment shows that physiological problems can be overcome. The economics largely depend on the availability of equipment, such as a suitable crane, low loader and excavator. The method is not only applicable to amenity planting but it is suggested by the author that it could be used to introduce 20-30-ft.-high date palms as shade trees in citrus plantations, thus saving some 15-20 years to the farmer. In this case the trees could be planted 3 ft. deeper than normal and the resulting formation of new roots would prolong their lives.

Copies of the paper can be obtained from Mr. R. H. Nocton, 591 Alwiya, Arasa, Iraq. C. J. TAYLOR

ISOLATION AND IDENTIFICATION OF THE INITIAL PEAK OF THE EARLY RECEPTOR POTENTIAL

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RECENTLY, Brown and Murakami¹ observed a new receptor potential in the eye of the cynomolgus monkey using intra-retinal microelectrodes. They found that the new response is produced only with high-intensity stimulus flashes and is characterized by an extremely short latency (<0.1 msec) and a strikingly high resistance to anoxia. The amplitude maximum of the response was found to occur at the ciliary connexion between the outer and inner segments of the receptors. Brown and Murakami have labelled this response the early *RP* (receptor potential). Afterwards Cone² has shown that a similar response occurs in the electroretinogram (ERG) of a variety of vertebrate eyes. He found that in the albino rat the early *RP* almost certainly depends on the rhodopsin in outer segments of rods because the early *RP* has the same spectral sensitivity as rhodopsin and the amplitude of the early *RP* is linearly proportional to the pigment bleached by a flash. His evidence, therefore, strongly supports Brown and Murakami's conclusion that the response originates in the receptors.

These authors further noted that in some vertebrate eyes the early *RP* has a biphasic wave-form^{2,3}, a small corneal positive phase (the positive peak) preceding the dominant, corneal negative phase (the negative peak). We have now observed a similar wave-form in the excised eye of the albino rat by lowering the temperature of the eye somewhat below the physiological temperature (Fig. 1*B*). Apart from opposite polarity the most notable feature that distinguishes these two peaks appears to be their strikingly different temperature dependence. By lowering the temperature sufficiently it was possible to abolish the negative peak and isolate the positive peak (Fig. 1*C*). Significantly, the positive peak persists well into sub-zero temperatures. This behaviour suggested to

us that the two peaks are produced by separate processes. Although the corneal negative component of the early *RP* has been shown to be a receptor potential, the positive component has never been investigated as a separate process. We, therefore, sought to determine whether or not the positive peak also originates in the receptors. If the positive peak is a receptor potential, because of its shorter latency it is probably even more closely linked to the 'primary events' of visual excitation than the negative peak.

Using the apparatus previously described² we undertook to observe the early *RP* in the ERG of albino rats (Sprague-Dawley) at various temperatures. The stimulus flashes were produced by a 65-joule photographic strobe lamp (Honeywell Strobosar 65C) having less than a 0.7-msec flash duration. To minimize artefacts the strobe lamp was housed in a soft-steel box, and the electrodes were shielded from the flash as much as possible. With these precautions the artefacts were found to be negligible. The effects of temperature could be studied on excised eyes, because the early *RP* has such a high resistance to anoxia^{1,2}. However, since visual pigment does not regenerate in the excised eye of the rat, each set of observations was performed on an eye freshly excised from a fully dark-adapted animal. The electrodes were placed against the cornea and the back of the excised eye. The eye and the electrodes were then mounted in a chamber partly submerged in a thermal bath. Wratten neutral density filters were used to vary the stimulus intensity. The wavelengths of the stimulus flash were varied by using a set of five Baird-Atomic interference filters transmitting at 420, 450, 500, 560 and 620 m μ . The band-widths of the filters at 10 per cent transmission were found to be about ± 6 m μ .

The signals obtained in the rat at 35°, 25° and 0° C are displayed in Fig. 1. At the physiological temperature the negative peak completely dominates the positive peak (Fig. 1*A*). As the temperature is lowered, however, the amplitude of the negative peak decreases rapidly from

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