

## Summaries of Addresses of Presidents of Sections\*

### Noise and the Nation

THE programme in Section A (Mathematical and Physical Science) this year is largely devoted to some of the social and industrial developments of applied physics. The president of the Section, Dr. G. W. C. Kaye, has broken with precedent in giving an address of an experimental character, and in choosing an acoustical subject for the first time in the history of the Section, extending over a hundred years.

Acoustics was long the Cinderella of the physical sciences, but with the coming of the gramophone, radio, broadcasting and the talking pictures, and the popularizing of the telephone, the commercial value of applied acoustics must now run into very large figures. Sound has become a marketable commodity, the cultural and political developments of which, particularly in regard to broadcasting, it is not easy to envisage. The literature is immense and the terminology large and extensive, as may be gathered from the recently published acoustical glossary of the British Standards Institution.

Simultaneously with these developments in applied acoustics, the nation has begun to take notice of the growth of noise—a by-product attributable in great part to an increasingly mechanized civilization. Much research is being carried out to meet the public demand for greater protection against the noise nuisance of to-day, chief interest being probably centred in the noises on the road and the noises experienced in modern buildings, which are admittedly not so quiet as those of a generation ago.

It is only within the last few years that practicable instruments have become available to measure and analyse sounds and noises, though it cannot be said that finality in these directions has been reached. In cases of annoyance caused by noise, experience indicates that while the composition and the psychological aspects are not to be ignored, sheer loudness is often a determining factor. Particular attention has therefore been devoted to the subjective scale of loudness and its unit, the phon, and the associated unit of energy or pressure level, the decibel. An important step was taken this year when both were adopted as international units by some thirteen nations in Paris.

The study of the general question of noise transmission, particularly in buildings, is more complex than might be imagined, and some of the major difficulties are not yet completely resolved. For the purpose, facilities such as are provided by the 'sound-proof' acoustic laboratories at the National Physical Laboratory have proved to be necessary. *Inter alia*, it already appears that special designs of double floors, double walls and double windows, which have been evolved, form material contributions to noise-abatement in buildings. The degree of public interest in the general question is illustrated by the wide variety of noise problems submitted to the National Physical Laboratory during the last few years: for example, the mitigation of the noises in aeroplane cabins and engine-testing factories, trains, ships, tube railways, motor-cars, motor-cycles, motor-buses, motor-horns, pneumatic drills, printing works, transformer sub-stations, cathedrals, assembly halls, business offices, flats, miniature rifle ranges, building operations and so on.

The growing volume of road traffic and the ever-increasing speed and acceleration of individual vehicles are major contributory factors to the problem of road transport noise. A Departmental Committee of the Ministry of Transport was appointed in 1934 and has since published three reports. Loudness measurements, many thousands in number, were conducted for the Committee by the National Physical Laboratory on the overall noise of some hundreds of motor-vehicles, both new and old. The Committee has proposed noise limits, which, while making very moderate demands on most types of vehicle would, by ruling out the flagrant offenders, help to ensure a standard of acoustical decency on the roads of Great Britain. More recently, the Committee has submitted a report on motor-horns.

Organized steps are being taken in Great Britain to further the abatement of the many types of unnecessary noise. There is now a goodly list of 'silent' appliances in everyday life, though it is evident that as regards many commercial machines and processes we shall have to put up with second-class expedients for the present. It is evident, however, that the finding of practicable solutions to the many ramifications of the noise problem would be welcomed by almost every section of the community.

\* The presidential address, and addresses by the sectional presidents, are being published as "The Advancement of Science, 1937" (Nottingham: B.A. Reception. London: Burlington House.) 3s. 6d.