the proximate composition of sound, mature, true wood from authentic samples of the timbers with the view of studying (1) their general composition; (2) the possibility of constancy of chemical factors within a species, and of regular differences between species, so that these factors might be used in the identification of the timbers; (3) the variation of chemical composition within a tree; and (4) the applicability to Australian timbers of existing standard methods of wood analysis.

Some striking differences in chemical composition have been revealed between the eucalypts examined and the hardwoods of North America for which analyses are recorded. The eucalypts may be said to be characterised by the presence in their vessels, rays, and fibres of gum-like, brittle, extraneous substances which are not soluble in the usual organic solvents, but are readily soluble in alkaline solutions. The eucalypts possess definitely lower contents of cellulose and total pentosans than North American hardwoods do, even though due consideration is made for differences in extractives. It is interesting to note that the lignin content is much the same for both series in spite of the different analytical methods used, and, if it is assumed that the apparent lignin content of the North American woods will be decreased by initial treatment with $N/8$ sodium hydroxide, then the figures will probably be nearly the same.

The present study has revealed the fact that the standard methods for wood analysis employed in other countries are not readily applicable to the eucalypts. Here again the extraneous substances have played an important part. Their brittle nature has served to indicate that the so-called standard method of sampling wood in the form of sawdust, powder, etc., is inaccurate. Their insoluble nature and resistance to acid hydrolysis have resulted in the failure of the usual method for indicating the correct lignin content of woods. Consequently, the methods of analysis have had to be considerably modified, and it would appear that these modifications are applicable to wood analysis in general.

Developments in Highway Research

PROF. STEINBURG of University of Maryland gave a radio talk on January 13 under the auspices of Science Service over the Columbia broadcasting system on developments in highway engineering. Of the many problems confronting the engineer, the one in which the public is most interested is that of safety in the streets. In the United States there is a rapidly increasing motor-car annual toll of about 34,000 lives and a million injuries.

Although primarily an engineering problem, highway safety is very considerably affected by the psychological, as well as the physical, demands upon the driver of a motor-vehicle. Recent research has shown that the human factor is responsible for approximately ninety per cent of motor-vehicle accidents in the United States and that the causes attributed to defects in the highway or the vehicle are of small relative importance. A psychological study was recently made at the Iowa State College of 2,000 drivers. They were tested on a specially constructed outside road as to their action and reaction when lights, signals, direction and warning signs were encountered. The results showed that the drivers could be divided into three classes. The first class consists of the 'accident free' drivers and comprises about seventy-five per cent of those tested. This group causes little trouble in any ordinary circumstances. The second group numbers about twenty per cent of the total and contains the 'accident liable' drivers who give trouble from various causes. Some are irresponsible, some are preoccupied through illness or personal affairs, while others are careless. Their failure arises either from heredity or environment and renders it necessary for the highway engineer to provide fool-proof roads. The third small group and the individuals who compose it generally suffer from some defect such as colour blindness, restricted field of vision, double vision of a single object, or extreme nervousness and poor co-ordination. Now as half the total accidents are caused by only about seven per cent of all drivers, it is obvious that special consideration has to be given to this third class.

A recent study of road signal signs shows that in the central west of the United States they are well standardised as to form, size, colour and location, while in the east there is much diversity of practice. Delaware has recently experimented with a pictographic signpost showing the direction of the roads on the marker by drawings similar to those used in Canada. They were found much clearer and more easily understood than the type in general use. Experiments have shown that arrow pointers are superior to the marks *R* and *L* for indicating right and left, as many people are momentarily nonplussed when told to go to the right or to the left; and it has been found that for road markers, canary yellow is much the best colour, as it stands out well from surrounding objects at all seasons of the year, and, as the human eye is very sensitive to yellow light, it is good for low illuminations.

Experiments were quoted showing that the capacity of a two-lane road is 1,000 vehicles per hour, for a three-lane road it is 2,000 and for a four-lane 3,000 vehicles and that the risk of accident is greatest with the three-lane road. This research in highway engineering has been a valuable one and has led to many practical changes which will result in a very large saving of both highway funds and vehicle operating costs.

Nomenclature of British Marine Mollusca*

IN revising the "List of British Marine Mollusca" for his presidential address to the Conchological Society, Mr. R. Winckworth has, admittedly, attempted a difficult task which is bound to bring forth criticism. A new list was certainly wanted, for it is more than thirty years since a special committee of the Conchological Society published one (*J. Conchol.*, 10, No. 1. Jan.. 1901) which is now in many ways out of date. All workers on the group will be grateful for this well-authenticated revision, compiled by one who is an authority on the subject.

The greatest difficulty which one meets in

* "The British Marine Mollusca", by R. Winckworth. *Journal of Conchology*, 19, No. 7, June 1932 (Presidential Address, Oct. 1931).