

the recent discovery at Tell Duweir of an earlier manifestation of a similar school of artistic production. Among the subjects here represented are Egyptian gods, cherubim, the winged sphinx, palms and lilies. In addition to the antiquities, a large series of photographs is shown, which gives a comprehensive view of the chronological range and the extent of the excavations, as well as of the character of the objects found.

#### New Aeroplane for England to Melbourne Race

THE first flights of a new racing monoplane, known as the *Comet*, designed and built by Messrs. De Havilland for the England to Melbourne race, have just taken place at Hatfield. These preliminary trials were successful, and there is every reason to believe that the machine will be ready for its official airworthiness tests in what is probably a record time, the decision to produce the machine having been made only in January last. Three machines of the type have been built, all of which are entered for the race. The most outstanding feature of the design is the thin tapering wing, in which all the shear stresses are taken by the wooden skin covering. This idea is not entirely new, but its use has been developed much further in this case than hitherto. The wing, entirely of wood, consists of one main girder member made up with three spars, distance pieces giving a cellular construction, and an amalgamating skin of thickness varying to suit the stresses applied. A leading and trailing edge are attached to complete the aerofoil form. The two pilots are placed well behind the wing, with the main fuel tanks filling the body in front of them. A further smaller tank occupies the space behind them. Two special Gipsy Six (230 H.P.) engines are placed outboard, practically buried in the wings, with such parts as are necessarily protruding below, carefully cowled. The under-carriage legs are masked behind the engines so far as possible, and the lower portions are retracted to the same space during flight.

#### Sting of Hive-Bees

THE point raised by Dr. J. G. Myers, in *NATURE* of August 25, p. 290, regarding the ability of the hive-bee to withdraw its sting, is not a new one, and has elicited a letter of protest from a practical beekeeper, Mr. Z. B. H. Garrett, of Ingoldsby, Longfield, Kent. When bees are 'induced to sting' experimentally, they frequently extricate the sting as soon as the pressure or other inducement is relaxed. Naturally a bee can withdraw its sting from the soft tissues of, say, a wax-moth larva more easily than from the thumb of the experimenter. Another point which is generally overlooked is the age of the stinging bee. Up to three days or more after emergence, young bees can scarcely be persuaded to use their stings. The typical stinging age, as was first shown by Rosch, is towards the end of the period of domestic duties, and on the eve of the outdoor foraging period. It is reasonable to surmise that the sting glands reach their maximum development at this period of the bee's life, just as the lateral pharyngeal glands do at

a somewhat earlier stage—possibly to atrophy, as do the latter with advancing age. The stings received by the beekeeper as one of the hazards of his calling are given with a will by the guard bees, which are physiologically ripe for the job. Such bees make for the eyelids, nose, or the back of the neck, and seldom attempt to remove their stings, though the beekeeper should make a point of doing so, without squeezing the venom sac, at the earliest opportunity. It is otherwise with those bees that crawl up the sleeves or trouser legs. These have no *malice prepense*, and do not use their stings until they find themselves trapped by the pressure of the clothing or nervous movements on the part of the beekeeper. Such bees, if undamaged and given time, can often withdraw their stings and be coaxed out towards the light.

#### Mechanical Weather Forecasting

"DR. CURRY'S weather prophet" is an attractive aluminium instrument, light in weight, circular in shape, and thin enough to go easily into the pocket, which is being marketed in England by W. B. M. Unland, 72 Leadenhall Street, London, E.C.3. The face of the disc is adorned with a ring of coloured slips, ranging from a deep mystical blue, like the blue of the sky seen from a high mountain, through violet to a pinkish hue. In the centre of the disc is a tiny, restless compass. The tale of magic is not yet done: there are two little fairy casements. Through one, when the stage is set, can be seen a letter telling of the direction of the wind, and through the other, Dr. Curry's weather prediction in plain black print, an austere definite pronouncement. According to an experienced motor salesman, the public estimates the value of a motor-car by the array of instruments on the dashboard. Dr. Curry, or if not Dr. Curry, then the instrument designer who has given his idea practical shape, is evidently an equally profound student of ill-informed, would-be-expert humanity. Here is an instrument of character and charm which makes the more expensive forecasting aneroid barometer look as though it should cost far less. The price is 6s. 9d., and for an extra shilling the weather wisdom of the aneroid is 'thrown in' by a simple device. If mass production could bring the price even lower it might take even the South Sea Islands by storm, not because it is a praiseworthy attempt to get automatically a useful forecast from the observed direction of the wind and the relative humidity as shown by the hue of a chemically-treated slip, but because it is impossible for any human being to see one without being impelled to find out what it is all about.

#### Pulpwood for Paper in the United States

A LARGE amount of American capital has been employed for building newsprint mills in Canada. Recently, attention has been directed to the great pine forests in the Southern States and their suitability for making pulp for newsprint is being investigated. In the *Scientific American* of May, 1934, an interesting account is given by Dr. Herty of what is being done in this direction. It is pointed out that



the South Atlantic and Gulf States have within their borders more than a hundred million acres of 'cut-over' lands and more than twenty-five million acres of abandoned farm lands. Despite the carelessness of owners, magnificent forests of yellow heart pine trees have sprung up. If this wood is suitable for making pulp, then the whole needs of the United States, and in addition a flourishing export trade, could be maintained from this supply. A laboratory has been built in Savannah, and investigations on a commercial scale have been made. From the colour point of view, early experiments showed that the pulp was as good as that made from spruce in the northern mills. Later on, evidence of blue stain appeared on some of the samples and experiments were made to overcome this. It was discovered that logs left with the bark on them for three weeks showed no sign of stain (or fungus growth). The wood was therefore pulped and ground within three weeks after it had been cut. The quality of the printed paper made from it gave every satisfaction. It had a marked velvety feel, required little ink for printing and was more pliable than the average newsprint. While this work is being carried on in the laboratory, reforestation with young pine trees is proceeding at a rapid rate in Georgia.

#### The Load-Dispatcher

IN the early days of electricity supply, the chief engineer of the station was in charge at the main switchboard. To this, all the generators and the supply mains were connected. The engineer was responsible not only for the condition of the machines, but also for putting them into operation at the right times so as to obtain the maximum economy. Now that many stations of very different types are linked together, a suitable staff and a 'load-dispatching' plant are necessary in order to run the system economically. The office and plant may be part of one of the stations or may be quite separate. A paper on this subject was read by Dr. Sleicher to the Institution of Electrical Engineers on May 3. He gave an account of modern practice in Germany and in other European countries of the supervisory control systems as applied to large interconnected supply areas. He showed how important the work of the load-dispatchers is to the prosperity of the undertaking. They must know the right number of machines to be started and the time required to start them. In the Berlin municipal works, for example, the period of preparation from the moment of the order of starting until the opening of the stop valve is from 8 to 35 minutes. The time from the opening of the valve until full speed is attained is from 15 to 90 minutes according to the size of the turbines. The time for the synchronising and switching on to the system is very short in comparison with the starting-up period. A sudden demand for power cannot be met by turbines. When surplus water-power is available it is most useful when peak loads have to be carried. Eleven pumping stations are already in use in Germany for this purpose.

#### Wind Tunnels for Aeronautical Research

THE Aeronautical Research Committee's "Reports and Memoranda No. 1569" (H.M. Stationery Office. 1s. net), recently issued, gives a description of the new open jet wind tunnel at the National Physical Laboratory, and also describes the preliminary model experiments carried out in order to ensure the most efficient aerodynamic performance from the actual tunnel. The results are a striking vindication of the exponents of the use of the principles of dynamical similarity in comparing the behaviour of objects of similar form but varying sizes. These principles offer a convenient, and often the only possible, way of investigating questions in aircraft design and aerodynamic problems generally. Two model tunnels were made, the second based upon experience with the first and also the compressed air tunnel—in matters of the shape of the ducts, shape and positions of guide vanes at the corners, design of air screws, etc. The power factor of the models was subject to a large scale effect. At the jet speed mainly used during the experimental work, namely, 50 ft./sec., the power factor was 1.8. The variation with Reynolds's number indicated that a full-scale power factor of about 2.6 might be expected. The full-scale tunnel now completed has exactly equalled expectations. The distribution of velocity in the jet is as good as was anticipated, and the power factor has the predicted value of 2.6. The elliptical nozzle of the tunnel has a horizontal major axis measuring 9 ft. 1½ in., and a minor axis of 7 ft. 0 in., and an input of 375 B.H.P. at the air-screw yields an airspeed of about 210 ft./sec. in the jet. The final model is being used for further small-scale research.

#### Problems in Deep-Level Mining

THE Association of Mine Managers of the Transvaal (Johannesburg) has just issued an interesting volume entitled "Some Aspects of Deep Level Mining on the Witwatersrand Gold Mines with Special Reference to Rock Bursts". The volume contains six papers by leading practical authorities on Witwatersrand mining, together with the discussions of these papers and an appendix specifically dealing with rock bursts. In spite of the title, rock bursts are not discussed in all the papers submitted; thus, in the very first paper, dealing with mining on the Robinson Deep Mine, is the following statement with regard to rock bursts: "This is a subject of such importance that a detailed discussion of same is outside the scope of these notes". The other papers, however, deal with rock bursts at considerable length, although some of them confine their attention mainly to a class of rock bursts which are called "pressure bursts"; these are defined as follows by Mr. R. E. Mickel, the underground manager of the Durban-Roodepoort Deep Mine: "this type of burst includes bursts in the mined out areas, except punch bursts, and bursts on faces where the solid is not completely destroyed"; apparently this definition is accepted by everybody, but there seems to be a general feeling that that particular variety of rock burst which is known as a