

Prize Awards of the Paris Academy of Sciences.

AT the annual public meeting of the Paris Academy of Sciences the prizes and grants for 1930 were awarded as follows:

Mathematics.—The Poncelet prize to Arnaud Denjoy, for the whole of his mathematical work; the Franceur prize to Eugène Fabry, for his work on the singularities of analytical functions.

Mechanics.—The Montyon prize to Paul Le Rolland, for his work on the measurement of hardness by means of the pendulum; the Henri de Parville prize to Emile Duchêne, for his work in ballistics.

Astronomy.—The Lalande prize to Nicolas Stoyko, for his theoretical and practical work on the calculation of planetary orbits; the Valz prize to Gilbert Rougier, for his work on photoelectric cells; the Janssen medal to Bernard Lyot, for his experimental work on the polarisation of light from the planets; the Pierre Guzman prize to Alexandre Véronnet, for his works on cosmogony; the La Caille prize to Mme. Edmée Chandon, for her work on the tides of the Red Sea.

Geography.—The Delalande-Guérineau prize to Félix Ollivier, for his book "La topographie sans topographes"; the Gay prize to André Guillaumin, for his work on the flora of the islands of the Pacific; the Tchihatchef foundation to Jean Bathellier, for his contribution to the systematic and biological study of the Termites of Indo-China; the Binoux prize to Georges Poivilliers, for his work on the application of photography to topography.

Navigation.—The Prix de la Marine to Robert Bureau and Philippe Wehrlé, for their meteorological work in connexion with aerial navigation; the Plumey prize to Paul Régnault, for his work on the strength of materials used in the construction of steamships and boilers.

Physics.—The La Caze prize to Henri Abraham, for the whole of his scientific work; the Hébert prize to Richard Langlois, for his memoir on asynchronous machines with rotating fields; the Hughes prize to Alexandre Dauvillier, for his work on the X-rays; the Clément Félix foundation to Jean Lecomte, for his work on the infra-red.

Chemistry.—The Montyon prize (unhealthy trades) to Roger Douris, for his work on poisonous gases; the Jecker prize to Joseph Bougault, for the whole of his work in organic chemistry; the La Caze prize to Georges Denigès, for the whole of his work in analytical chemistry; the Cahours foundation to Lucien Andrieux, for his researches on the electrolysis of metallic oxides in solution in fused boric acid, borates, or fluorides; the Houzeau prize to Paul Mondain-Monval, for his work in physical chemistry.

Mineralogy and Geology.—The Cuvier prize to Maurice Gignoux, for the whole of his geological work; the Joseph Labbé prize to Jean Jung, for his geological work applied to prospecting for petroleum deposits.

Physics of the Earth.—The Victor Raulin prize to Albert Baldit, for his work on the influence of the relief and nature of the soil on the meteorological elements.

Botany.—The Desmazières prize to Frédéric Baille, for his researches in mycology; the Montagne prize to Pierre Allorge, for his work on the Muscineæ and fresh-water Algæ; the de Poincey prize to Mlle. Aimée Camus, for the whole of her botanical work.

Anatomy and Zoology.—The Da Gama Machado prize to Marcel Avel, for his experimental researches on the somatic sexual characters of *Lumbricus*; the Savigny foundation to Louis Parrot, for his studies in

the biting Arthropods, particularly in North Africa; Jean Thore prize to Henri Bertrand, for his researches on the larval evolution and metamorphoses of the Coleoptera.

Medicine and Surgery.—Montyon prizes (2500 francs) to Marcel Aynaud, Henri Lagrange, and Lucien Viborel; honourable mentions (1500 francs) to Paul Blum and Ernest Schaaf, to Noël Fiessinger, Henri René Olivier and Maurice Herbain, and to Henri Fischer; citations to Charles Mayer and to Gustave Rappin; the Barbier prize to Léopold Lévi, for his researches on the endocrine glands; the Breant prize between Julien Dumas (2500 francs), for his work on the bacillus of dysentery, and Stefan Nicolau, Ian Alfred Galloway, and Mme. Octavie Dimancesco-Nicolau; the Godard prize between Jules Janet, for his memoir on the diagnosis and treatment of blennorrhagia in man and in woman, and Pierre Gley, for his work relating to the yellow body and ovulation; the Mège prize to Henri Vignes, for his book on gynæcological physiology and medicine of women; the Dugate prize to Henry de Varigny, for his work on death, true and false; the Bellion prize to Jean Bordas, for his work on the hygienic and economical treatment of manure; the Baron Larrey prize to Joseph Maissonnet, Daniel Petit Dutailis, and Théophile Alajouanine, for their memoir on the remote after-effects of trepanning; the Alfred Dutens prize between Henri Bordier, for his memoir on diathermy and diatherapy, and Georges Bourguignon, for his work relating to chronaxy.

Physiology.—The Montyon prize to Charles Porcher, for his book on milk from the colloidal point of view; the L. La Caze prize to Maurice Doyon, for the whole of his work in physiology; the Pourat prize to Henri Delaunay, for his researches on the nitrogenous excretion of the Invertebrates; the Martin-Damourette prize to Jean Régnier, for his researches on the influence of hydrogen ions on physiological phenomena and on anaesthetics; the Philipeaux prize to Jacques Millot, for his work on the physiology of the Araneidae.

Statistics.—The Montyon prize to René Roy, for the whole of his work on the application of mathematics to statistics and economics.

History and Philosophy of Science.—The Binoux prize (in equal parts) between Pierre Brunet and Niels Nielsen.

Works of Science.—The Henri de Parville prize to Raoul Combes, for his work on the life of the plant cell; the Jeanbernat-Doria prize to Henri Volkringer, for his book, "The Stages of Physics".

Medals.—Berthelot medals were awarded to Roger Douris, Joseph Bougault, Georges Denigès, and Paul Mondain-Monval.

General Prizes.—The prize founded by the State to Georges Valiron, for his work on analytical functions; the Bordin prize to Louis Dangeard, for his contributions to our knowledge of the sea floor; the Lallemand prize to Michel Raoul May, for his work on the nervous system and the grafting of sense organs; the Vaillant prize to Robert Perret, for his topographical and geological map of the mountains between the valleys of Chamonix and Sixt; the Le Conte prize to Elie Cartan, for the whole of his mathematical work; the Houlevigie prize to Georges Giraud, for the whole of his work on partial differential equations; the Saintour prize to Elie Ivanow, for his researches on the artificial impregnation of mammals; the Jules Mahyer prize to Constantin Dawydoff, for the whole of his researches in zoology and especially on the embryo-

geny of the Vertebrates; the Henry Wilde prize between Maurice Leriche (2000 francs), for his palæontological researches, and Ferruccio Zambonini, for his work in mineralogy; the Caméré prize to David Wolkowitsch, for his memoir on the applications of geometry to the stability of constructions; the Gustave Roux prize to Marc André; the Thorlet prize to Adolphe Richard; the Albert I. of Monaco prize to Lucien Cuénot, for his biological work.

Special Foundations.—The Lannelongue foundation to Mmes. Cusco and Rück; the Hélène Helbronner-Fould prize to the late Mme. Yves Delage.

Prizes of the Grandes Écoles.—The Laplace prize to Henri Feltz; the L. E. Rivot prize between Henri Feltz, Pierre Julien Couture, Émile Bideau, and Camille Henri Foin.

Foundations for Scientific Research.—The Gegner foundation to Désiré Bois, for his book on the history, utilisation, and culture of plants used for food; the Jérôme Ponti foundation to Robert Forrer, for his work on magnetism; the Hirn foundation to Maurice Kraitchik, for his studies in the theory of numbers; the Henri Becquerel foundation to Jean Thibaud, for his work on X-rays of long wave-length and the joining up the ultra-violet and X-ray spectra; the Victor Noury foundation between Augustin Boutaric (3000 francs), for his work on colloids; Henri Baulig (3000 francs), for his book on the central plateau of France and its Mediterranean border, morphological study; the late Franz de Zeltner (2000 francs), for his work in western Africa; Pierre Lamare (2000 francs), for his geological researches in the Yemen; and Raymond Hovasse, for his biological and zoological work; the Charles Bouchard foundation to Léon Binet, for his experimental researches on apparatus for perfusion and artificial respiration; the Henry Le Chatelier foundation to Marcel Ballay, for his researches on the beryllium alloys; the Pierre Lafitte foundation to Raymond Jouaust, for the whole of his work on radio-electricity; the Roy-Vaucouloux foundation to Joseph Magrou, for his work on the production of tubercles and galls in plants.

THE LOUTREUIL FOUNDATION.

The Academy has considered twenty-nine applications for grants from this fund, and has made the following twenty-two awards, amounting in all to 121,000 francs:

1. *Researches on Definite Problems.*—10,000 francs

to Louis Dunoyer, for the extension of his researches on photoelectric cells; 5000 francs to Raymond Ricard, for his researches on the spark spectra of metals; 5000 francs to Jacques Duclaux, for his work on the measurement of the transparency of the atmosphere; 4000 francs to Maurice Fontaine, for his researches on the physiology of marine organisms; 3000 francs to François Maignon, for the continuation of the study of the influence of the seasons and of the genital glands on respiratory combustion; 3000 francs to Gabriel Petit, for his researches on the grafting of endocrine glands; 3000 francs to Jean Verge, for his researches on d'Herelle's bacteriophage and its applications in veterinary medicine; 4000 francs to the viticulture laboratory of the National Hygronomic Institute (Director, Pierre Viola), for various researches in plant pathology now in progress.

2. *Voyages and Exploration.*—5000 francs to Charles Alluard, as a contribution towards an expedition to the southern Sahara; 3000 francs to Norbert Casteret, for his spelæological explorations in the Pyrenees; 4000 francs to Auguste Méquignon, for the continuation of his entomological researches in the Azores archipelago.

3. *Purchase of Material.*—3000 francs to Emilio Damour, for the completion of the installation of the glass laboratory at the Conservatoire national des arts et métiers; 3000 to Jean Georges Lafon, to complete the installation of electro-cardiography at the physiological laboratory of the National Veterinary School of Toulouse; 1000 francs to the Arcachon Scientific Society, as an aid to building.

4. *Libraries.*—15,000 francs to the National Museum of Natural History, for producing a catalogue of the books contained in the laboratory libraries; 12,000 francs to the Lyons National Veterinary School, and 4000 francs to the Toulouse National Veterinary School, for increasing their libraries.

5. *Publications.*—5000 francs for the Fauna of the French Colonies; 5000 francs to the French Federation of Societies for Natural Science; 15,000 francs for the continuation of the catalogue of the scientific periodicals in the libraries of Paris; 5000 francs to Emmanuel de Margerie, for the preparation of a geological map of Africa; 4000 francs to the Science Museum of Lyons, for assisting the publication of a memoir by L. Germain on the Helicoides of the French fauna.

Fruit Cultivation in Great Britain.

AMONG the recent bulletins issued by the Ministry of Agriculture, those entitled "Fruit Production—Tree Fruits, No. 2", and "Fruit Production—Soft Fruits and Nuts, No. 4", are particularly welcome, as in the present economic condition of the commercial fruit-growing industry all available information as to the results of recent research should be studied by growers, and, where possible, applied to the elucidation of the many problems connected with this highly specialised calling. In these publications the amateur and the professional grower have access to much valuable advice, written in language at once clear and concise and not overburdened by technical terms.

The factors dealt with in the opening chapter on the planning and planting of an orchard merit close attention, as miscalculations on these matters are of frequent occurrence and in after years are extremely difficult to rectify.

The question of shelter is dealt with briefly, but it is difficult to over-emphasise its importance in the economy of a commercial plantation, as losses from high winds occur annually, and are occasionally of a

very serious character. Three conifers are recommended as wind-breaks, but they are comparatively expensive. An excellent shelter belt may be formed by planting a mixture of common larch and spruce fir, which in a young state may be purchased at a cheap rate.

Information as to progress made in classification and suitability of vegetatively propagated stocks for various purposes is extremely helpful, as many amateurs fail to realise the influence of 'pedigree' stocks on the future behaviour of their trees. It is suggested that vegetatively propagated stocks, such as East Malling Types X., XII., XIII., XV., and XVI., may replace seedling stocks, but the existence of numerous orchards containing very large but possibly unremunerative apple trees testifies to the vigour of the stocks employed by earlier planters, and further information is desirable as to the ability of these standardised stocks to withstand the deleterious effects of grass.

The bulletin rightly stresses the importance of a rigid selection of plum stocks, and condemns the