

exercises a depressing influence on tree growth makes the new point that trees grown in land which is first cultivated and subsequently grassed are apt to be out-distanced in growth by those which are grown in grass from the start of the experiment. Mr. Barker suggests that this may be due to the trees previously free from the grass feeling the ill-effects of grassing all the more acutely because of their former immunity from those effects. The phenomenon does not appear to conform with current opinion, which holds that, once they are well-established, trees do not suffer from growing in grass.

PARIS ACADEMY OF SCIENCES.

PRIZES PROPOSED FOR THE YEAR 1916.

Geometry.—The Francœur prize (1000 francs), to the author of discoveries or works useful to the progress of pure or applied mathematics; Grand prize of the mathematical sciences (3000 francs), subject proposed, to apply the methods of Henri Poincaré to the integration of some linear differential equations, algebraic, and chosen from the simplest examples; the Poncelet prize (2000 francs), for work in pure mathematics.

Mechanics.—A Montyon prize (700 francs), for invention or improvement of instruments useful to the progress of agriculture, the mechanical arts or sciences; the Henri de Parville prize (1500 francs) for original work in mechanics; the Fournayon prize (1000 francs), to the author of the most important improvements in aviation motors.

Astronomy.—The Lalande prize (540 francs), to anyone, in France or elsewhere, who has published the most interesting observation, memoir, or work useful to the progress of astronomy; the Valz prize (460 francs), to the author of the most interesting astronomical observation made in the course of the year; the Janssen prize, for an important progress in physical astronomy.

Geography.—The Tchihatchef prize (3000 francs), for the recompense or encouragement of naturalists of any nationality distinguished in the exploration of the lesser-known regions of Asia; the Gay prize (1500 francs), for improvements in instruments or methods of topometrical and topographical surveys; the Binoux prize (2000 francs), for work in geography or navigation; the Delalande-Guérineau prize (1000 francs), to the Frenchman who, as traveller or *savant*, shall have rendered the greatest service to France or to science.

Navigation.—The extraordinary prize of 6000 francs for work increasing the efficiency of the French naval forces; the Plumey prize (4000 francs), for an improvement in steam engines or other invention contributing to the progress of steam navigation.

Physics.—The Hébert prize (1000 francs), for a treatise or discovery valuable for the popularisation and practical use of electricity; the Hughes prize (2500 francs), for a discovery or work contributing to the progress of physics; the La Caze prize (10,000 francs), to the author, French or foreign, of works or memoirs contributing to the progress of physics; the Kastner-Boursault prize (2000 francs), for the best work on the various applications of electricity in the arts, industry, and commerce.

Chemistry.—The Jecker prize (10,000 francs), for work in organic chemistry; the Cahours prize (3000 francs), for the encouragement of young workers already known for researches in chemistry; the Montyon (unhealthy occupations) prize of 2500 francs, and mention of 1500 francs, for the discovery of a means of reducing the unhealthiness of a trade or calling; the Houzeau prize (700 francs), for a young

deserving chemist; the L. La Caze prize (10,000 francs), to the author, of any nationality, of the best work on chemistry.

Mineralogy and Geology.—The Victor Raulin prize (1500 francs), for facilitating the publication of works relating to geology and palæontology.

Botany.—The Desmazières prize (1600 francs), for the best publication during the year on Cryptogams; the Montagne prize (1500 francs), for work on the anatomy, physiology, development, or description of the lower Cryptogams; the Da Coincey prize (900 francs), for work on phanerogams; the de la Fons-Mélicocq prize (900 francs), for the best botanical work on the north of France.

Anatomy and Zoology.—The Savigny prize (1500 francs), for the assistance of young travelling zoologists, not receiving a Government grant, and who study specially the invertebrates of Egypt and Syria; the Cuvier prize (1500 francs), for a work on zoological palæontology, comparative anatomy, or zoology; the Thore prize (200 francs), for the best work on the habits and anatomy of a species of European insects.

Medicine and Surgery.—The Montyon prize (prize of 2500 francs, mentions of 1500 francs), for works or discoveries judged most useful to the art of healing; the Barbier prize (2000 francs), for the author of a valuable discovery in the surgical, medical, or pharmaceutical sciences or in botany having relation to medical science; the Bréant prize (100,000 francs), for the discovery of a means of curing Asiatic cholera or discovering the causes of this disease. Failing the award of the prize, the interest on the capital sum will be awarded for advances in connection with cholera or any other epidemic disease; the Godard prize (1000 francs), for the best memoir on the anatomy, physiology, and pathology of the genito-urinary organs; the Baron Larrey prize (750 francs), to a doctor or surgeon in the army or navy, for the best work presented to the academy and dealing with medicine, surgery, or military hygiene; the Bellion prize (1400 francs), for work or discoveries profitable to the health of man or to the amelioration of the human species; the Mège prize (10,000 francs), to an author who should continue and complete his essay on the causes which have favoured or retarded the progress of medicine from antiquity to the present day. The interest on this sum can be awarded by the academy as they see fit.

Physiology.—The Montyon prize (750 francs), for a work on experimental physiology; the Philipeaux prize (900 francs), for works in experimental physiology; the Lallemand prize (1800 francs), for work relating to the nervous system in the widest sense of the words; the Pourat prize (1000 francs), for a memoir on the cell constituents which exert the main influence on the water content of the different tissues; the La Caze prize (10,000 francs), to the author, French or foreign, offering the best work on physiology; the Martin-Damourette prize (1400 francs), for a work on therapeutical physiology.

Statistics.—The Montyon prize (prize of 1000 francs, and two mentions of 500 francs). The academy will consider not only memoirs sent in manuscript, but also works already printed and published which are brought to their knowledge.

History of Sciences.—The Binoux prize (2000 francs).

General Prizes.—The Arago medal; the Lavoisier medal, for eminent services to chemistry without distinction of nationality; the Berthelot medal, to persons who have been awarded by the academy prizes in chemistry; the Henri Becquerel prize (3000 francs); the Gegner prize (3800 francs); the Lannelongue prize

(2000 francs), for the relief of unfortunate scientific men or their immediate relations; the Gustave Roux prize (1000 francs), for a young French scientific worker; the Trémont prize (1100 francs); the Wilde prize (one prize of 4000 francs and two of 2000 francs), awarded without distinction of nationality for work in astronomy, physics, chemistry, mineralogy, geology, or experimental mechanics; the Lonchamp prize (4000 francs), for the best memoir on work on the diseases of man, animals, or plants from the special point of view of the introduction of mineral substances in excess as the cause of these diseases; the Saintour prize (3000 francs), for work in the physical sciences; the Henri de Parville prize (2500 francs) for original scientific work or publication; the Victor Raulin prize (1500 francs), for assisting the publication of work relating to geology and palæontology; the Houllé-vigue prize (5000 francs); the Caméré prize (4000 francs), to a French engineer for improvements in the art of construction; the Jérôme Ponti prize (3500 francs); the Bordin prize (3000 francs), the subject proposed for 1916, researches relating to the determinism of sex in animals; the Parkin prize (3400 francs), for researches on the curative effects of carbon in various forms, and more especially in gaseous form of carbon dioxide, in cholera, the different forms of fever or other diseases, or, as an alternative subject, for researches on the effects of volcanic action in the production of epidemic diseases in the animal and vegetable kingdoms and in causing abnormal atmospheric disturbances; the Jean Reynaud prize (10,000 francs); the Baron de Jouest prize (2000 francs), for a discovery useful to the public welfare; the prize founded by Mme. la Marquise de Laplace (a complete collection of the works of Laplace) to the first student leaving the Ecole Polytechnique; the Felix Rivot prize (2500 francs), divided between the four students leaving each year the Ecole Polytechnique with the first and second places in the section of Mines and of Ponts et Chaussées.

THE ENGLISH CERAMIC SOCIETY.¹

THE English Ceramic Society, to judge from the latest issue of its Transactions, still continues to do excellent work. Although the present number contains no article of first-rate importance, it is obvious from the general character of the communications, and the nature of the discussions by which they are followed, that the members are fully alive to the value of the society in promoting exchange of experience and opinion on the many obscure problems with which the art and craft of the potter is beset. No indication of the health and vigour of the society could be more significant than the manner in which individual knowledge and experience are made to contribute to the general benefit of the industry. Such a spirit has been far from the rule in times past, for in no other industry have trade secrets and little details of practice been more jealously guarded than in potting. The enlightened example of the society will do much to break down this absurd exclusiveness and short-sighted selfishness. If each thus contributes to the common stock, the general welfare is increased, and the position of the industry as a whole is enhanced, to the collective benefit of the manufacturers and the country generally. In this respect we have something to learn from our enemies. The spirit of co-operation has largely contributed to raise manufacturing in Germany to the formidable position it has gained. If we are to maintain, and especially

¹ "Transactions of the English Ceramic Society," Vol. xiii, Session 1913-14. (Stoke-on-Trent: Hughes and Harber, Ltd., 1914). Price to non-members, 30s.

if we are to increase our pre-eminence as the largest traders in the world, this spirit of co-operation and mutual helpfulness must continue to prevail, and to grow.

The communications in the present issue of the Transactions call for no special comment. The "Symposium on Fineness of Grinding" brought out a considerable difference of opinion as to the relative merits of cylinder- and pan-grinding, and as to the influence of the fineness of the particle on plasticity, contraction, texture, porosity, and "crazing"—all of them points which are capable of a satisfactory solution if attacked experimentally in a scientific manner. These are typical of the kind of problems with which the County Pottery Laboratory at Stoke-on-Trent may be expected to concern itself. The discussion on grinding bore unmistakable testimony to the influence of the human element, especially in pan-grinding. That influence was no less marked in the course of the discussion on "firing," and of the relative importance of "tops" and "bottoms," where opinion was equally divided. The average "fireman" may be (and evidently is in the opinion of some) a rather perverse and obstinately conservative kind of individual, wholly wedded to traditional practice, but if this volume falls into his hands, he may at least be able to retort that he knows more about firing than his betters seemed to know about French on the occasion of their visit to the pot-banks of our Ally! *Verb sap.* T.

EDUCATION IN RELATION TO INDUSTRY AND COMMERCE.¹

Our First Purpose.

WE are now in the midst of the greatest struggle that the British Empire has ever been engaged in. The outcome of the struggle involves not only our existence as a nation, but the existence of those principles and ideals of life and government which we hold dear. Our energies, individual and national, must for the moment all be turned to one purpose, to bring the war to a successful conclusion. The men who are fighting at the front are doing magnificent work, but it is for each of us in his own sphere to do his share in order that at the earliest possible moment the world may be free from the terrors of the war.

In time, peace will come. With that peace there will be renewed the international struggle for trade, and British enterprise must be ready to take full advantage of the great opportunities that will then occur. Individual effort will not be of any great use. Concerted action is essential if we are to retain the foremost place in the world of trade; and just as we are vigorous in the pursuit of the present war, so as a nation must we be vigorous in the pursuit of industrial and commercial supremacy.

The Industrial Army.

How is this supremacy to be attained? It is primarily a question of education. We must have in the first instance an industrial army, capable, alert, and well trained. The production of this army must begin in the elementary schools. The leaving age of school children, for urban districts at least, must be raised to fourteen years, and age must be made the only leaving qualification. Moreover, the children should leave at the end of the educational year in which they reach the leaving age, or, at any rate, they should leave only at the end of the school term in which the leaving age is reached. For this reform we must look to Parliament, as it is impossible for a

¹ Address delivered before the National Association of Education Officers on January 1 by the president, Mr. James Graham.