

In the experiments on mixtures with a coal dust the ignition-temperature of which was 1005°C . when pure (passed through a 240 mesh sieve and heated to 107°C . for an hour), it was found that with 80 per cent. coal dust and 20 per cent. shale dust the ignition-temperature was 1095°C .; with 80 per cent. coal dust and 20 per cent. calcium carbonate, 1095°C .; and with 96 per cent. coal dust and 4 per cent. sodium bicarbonate, 1095°C ., and similarly with smaller percentages of the inert substances.

M. Taffanel's apparatus, experiments, and conclusions are described in the "Cinquieme serie d'Essais sur les Inflammations de Poussieres," published in August, 1911, but space fails us to do more than mention them in this place.

Appendix I. is an abridgment of two papers—by Dr. Wheeler and M. J. Burgess—contained in vol. xcvi. and vol. xcix. of the Transactions of the Chemical Society, which deal with the destructive distillation of coal and the products evolved from it at different temperatures. Appendix II. is a description of the method of extracting those matters contained in coal that are soluble in pyridine, by means

THE BONAPARTE FUND OF THE PARIS ACADEMY OF SCIENCES.

THE committee of the Paris Academy of Sciences appointed to deal with the distribution of the Bonaparte Fund for the year 1912 has made the following recommendations, which have been accepted by the academy:—3000 francs each to MM. Louis Gentil, Pallary, J. Pitard, and Bouguil, members of the scientific expedition to Morocco. This expedition will undertake geological, zoological, botanical, and agronomical researches with a view to the future development of the country. 3000 francs to Prof. de Martonne and his fellow-workers, Jean Brunhes and Emile Chaix, for assisting the publication of a collection of morphological documents, entitled "Atlas Photographique des Formes du Relief Terrestre." 3000 francs to Louis Dunoyer for the construction of apparatus for the complete study of absorption and fluorescence spectra of the alkali metals. 3000 francs to M. Hamet, for collection of material for his work on the Crassulaceæ. 2500 francs to M. Bosler for the purchase of a prism of large dispersion for study-

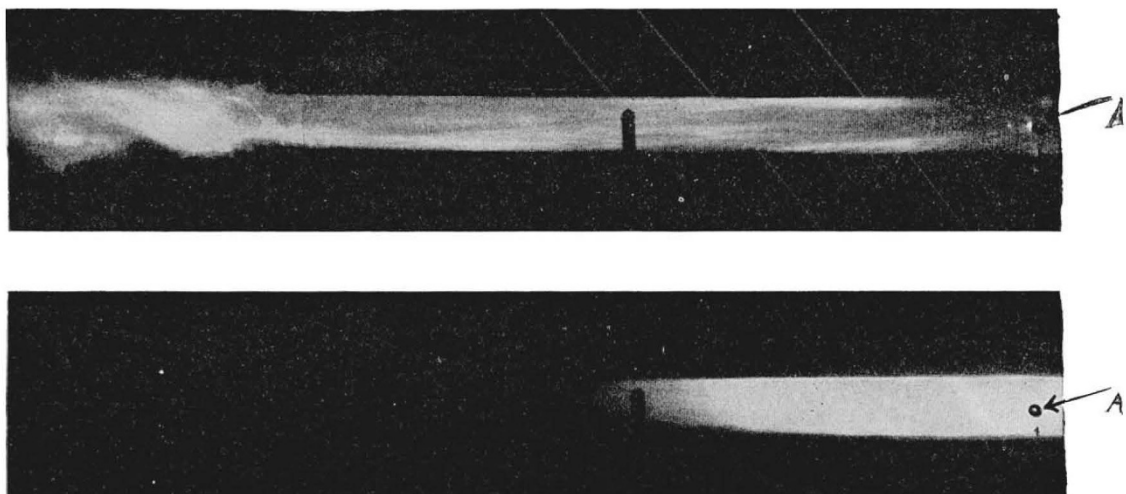


FIG. 3.—Typical photographs of the flames produced on the ignition of coal-dust clouds. The igniting-coil is at A.

of a Soxlet fat-extraction apparatus, of which an illustration is given. Appendix III. is a table of analyses (ultimate and proximate) of forty-six different samples of coal. It also contains the percentage (on ash-free dry coal) extracted by pyridine, and the relative ignition-temperature of each.

The members of the Committee are to be congratulated on the ingenuity displayed in the construction of the apparatus for ascertaining the ignition-temperature of more or less combustible dusts. The results of their experiments, as well as those of M. Taffanel in the same direction, are, in themselves, exceedingly interesting, and may, in some as yet occult manner, tend towards the prevention of colliery explosions. They would undoubtedly be of service if an attempt were made, at any time, to classify mines according to the more or less inflammable nature of the coal dust produced in them. But as the attempt to do this in Germany led to disastrous results in the case of at least one mine² in which the coal dust was supposed to be innocuous, the experiment is obviously a highly dangerous one.

W. GALLOWAY.

² Carolinenglück, Februarv 17, 1898: 116 killed.

ing planetary spectra. 2500 francs to M. Baldit, for the purchase of self-recording instruments for studying the electrical phenomena of the atmosphere. 2500 francs to Paul Pascal for apparatus required for the study of absorption in the ultra-violet by substances the magnetic properties of which have been previously studied. 2500 francs to M. Schlegel, for assistance in his work on some Crustacea. 2000 francs to M. Sauvageau, for assistance in his studies on the distribution of the Cystoseira. 2000 francs to M. Welsch, to assist him in the continuation of his geological work. 2000 francs to M. Bierry, to defray the expenses of his proposed work on the metabolism of the carbohydrates. 2000 francs to Dr. Mawas, to allow him to continue his experiments on the mechanism of the accommodation of the eye. 2000 francs to M. Gruvel, to assist him in his exploration of the bay of Lévrier from the zoological, oceanographical, and geographical points of view.

Awards from this fund are not given as prizes for completed work, but are given to workers of proved competence for assistance in carrying out definite researches.