

The export of bricks, artificial cement, raw bones, and fertilisers (except superphosphates) is subject to licence, but fertilisers, except potash salts, may be exported without licence as from June 1.

Bulgaria.—Export duties have been reduced on certain skins and edible fats.

Federated Malay States.—The export of china clay, felspar, and china stone is prohibited as from January 7.

Fiji.—The complete text of the revised customs tariff schedules may be seen at the Department, 18, Queen Anne's Gate, London, S.W. 1.

Exportation of gold and silver coin and bullion, rice, and raw sugar is prohibited as from December 15, 1920.

France and Algeria.—The export duty on oilcake has been modified.

The restrictions on the import of cellulose pulp and of paper in rolls have been withdrawn.

Greece.—The restrictions on the import of calcium carbide have been removed.

Grenada.—Additional export taxes have been levied on cocoa, cottonseed, nutmegs, and mace.

Italy.—Export licences are no longer required for manganese ore, magnesite bricks, newsprint paper, quinine salts, copper sulphate, and zinc waste.

Lead and zinc ores are again subject to export licence.

Malta.—The metric system of weights and measures will be used in levying customs duty as from July 1. Articles affected include alcohol, alcoholic beverages, malt, edible oils, petroleum, saccharin, sugar, spirit varnish, and vinegar.

Martinique.—The export duty on sugar has been increased to 21 fr. per 100 kg.

Netherlands.—The prohibition on the export of phosphatic fertilisers, glass powder, wood, zinc ore, and zinc oxide has been withdrawn.

The export of 210,000 metric tons of sugar-beet will be permitted, although the export prohibition remains in force.

Import duties have been increased on chloral hydrate, sulphuric and acetic ether, collodion, chloroform, spirit of nitrous ether, and similar substances prepared from or with alcohol.

New Zealand.—The regulations relating to the standards and labelling of vinegar are set out in the issue for April 7.

Nigeria.—Non-proprietary medicinal preparations containing alcohol imported by registered medical practitioners, dentists, and licensed druggists may be exempted from duty by the Governor in Council.

Portugal.—Paper fabrics and earthenware insulators now pay an increased customs duty.

Rumania.—The export duty has been modified on certain petroleum products and on oilcake.

Serb-Croat-Slovene State.—The export of all goods is allowed under conditions laid down in the Decree of April 16, 1920, with some exceptions, among which are sugar, gold, silver, and scrap iron.

Spain.—The export duty on oilcake has been abolished, but the export thereof is still subject to licence.

Switzerland.—Importation of industrial alcohol by private persons is prohibited.

As from March 18, import licences are required for paper, cardboard, and wares thereof, and for glass bottles.

Special export licences are required for, *inter alia*, cocoa powder, condensed milk, waste paper, scrap iron, copper turnings, precious metals, saccharin, potassium permanganate, indigo, and certain coal-tar colours.

Tunis.—Sugar may now be imported freely under certain specified conditions.

GOVERNMENT ORDERS AND NOTICES.

EMERGENCY REGULATIONS, 1921.

An Order in Council, issued on April 4, under the Royal Proclamation of Emergency, makes Regulations which empower the Government to take possession of land, works, plant, food, material, stores, etc., to regulate transport by road, light railway or canal, and requisition vehicles, to close ports and harbours, prohibit exports, control the supply of gas, water, electricity, and motor spirit, and to take possession of all or any coal mines, together with any plant, vehicles, railway wagons, etc., necessary for maintaining the supply and distribution of coal.

COAL EMERGENCY DIRECTIONS.—The Coal (Emergency) Directions, 1921, issued by the Secretary of Mines provide for a reduction of 50 per cent. in the industrial consumption of coal and fuel derived therefrom, prohibit the shipment of coal either as cargo or bunkers save with the permission of the Secretary for Mines or a person authorised by him, and regulate the supply and distribution of coal. Lighting used for advertisement and display is prohibited, gas and electricity companies are empowered to reduce the supply in order to economise coal, and the use of gas or electricity for power production is restricted by 50 per cent. The Directions came into force on April 2.

PROHIBITED EXPORTS.—Licences are no longer required for the export to Russia of any goods other than those the export of which is prohibited, except under licence, to all foreign countries.

REVIEWS.

LES ÉTHERS CELLULOSIQUES. Pt. I.: Les Éthers Minéraux de la Cellulose. Vol. I.: La Nitro-cellulose et le Celluloid. By ANDRÉ DUBOSO. Pp. 331. (Paris: A. D. Cillard, 1920.) Price 45 francs.

A book bearing this title naturally attracts the attention of celluloid chemists, explosives chemists, and that increasing number of scientists who are investigating the colloidal behaviour of nitro-cellulose. It is to be feared that each class will feel some disappointment after reading the book. Celluloid chemists and explosives chemists will find, it is true, a number of full descriptions of plant and processes, but not much that is new, and they will occasionally find that the data relating to the two industries are difficult to disentangle. Colloid chemists, on the other hand, will find little that is of interest, except some generalities on the colloidal constitution of celluloid. Possibly later volumes will be more stimulating in this respect. Some most important researches on nitrocellulose which have a direct bearing on the constitution of celluloid have recently been published, and it is to be hoped that the author will discuss these in due course.

The present volume deals with the manufacture of celluloid as far as the preparation of bleached and washed nitrocellulose pulp. It opens with a historical introduction, in which the author accepts the account of the discovery of celluloid given by Chandler (*cf. J.*, 1914, 225) on the occasion of the presentation of the Perkin medal to J. W. Hyatt in 1914. This account led at the time to a somewhat acute discussion (*cf. J.*, 1914, 678) on the relative claims of Hyatt and Daniel Spill, in which neither side perhaps did justice to the versatile genius of Alexander Parkes; however, the claims of

Parkes to fame rest also on his researches in electro-deposition and metallurgy, and there is no need to reopen the discussion. The chapter on the physical and chemical properties of celluloid will prove the most interesting to those outside the industry, and here one is impressed with the absence of direct experimental evidence for the theories advanced. The truth is that the experimental difficulties are so great and the complications so many in the case of the concentrated plastic masses obtained in celluloid manufacture that the results obtained from experiments can only be empirical. It is usually impossible to control experiments so that only one factor varies at a time, which is the ideal condition sought for in research. How many chemists would be prepared to assert that any two samples of nitrocellulose were identical? This difficulty arises at the outset, and since the nitrocellulose must be bleached, pulped, washed, dried, blended with solvents, kneaded, rolled, pressed, sliced, and stoved, and since, moreover, a few minutes more or less spent in some of these processes may profoundly modify the properties of the product, it is frequently impossible to ascribe the difference between any two samples of celluloid to a single cause. We are forced to conclude that the systematic study of solid celluloid must start with dilute solutions of nitrocellulose, and, although the author's views on the colloidal phenomena accompanying celluloid manufacture are interesting, we think that, for the present at any rate, they will prove sterile. A more promising system of attack would be to examine Bingham's division of colloid solutions into viscous liquids and highly mobile plastic solids, and to investigate nitrocellulose solutions in varying concentrations from this point of view. Until we know more about the distribution of solvent between the phases in dilute nitrocellulose solutions, we cannot expect to understand much about the constitution of solid celluloid.

The raw materials of celluloid manufacture are treated fully, and the author has made good use of the information contained in papers read before this Society by de Mosenthal (*cf. J.*, 1904, 292; 1911, 782). The chapter on nitration is preceded by a theoretical discussion on etherification, which, although not directly applicable to the nitration of cellulose at present, is perhaps a useful caution against too much rule-of-thumb in the control of the factory operation. The somewhat obvious mathematical treatments of nitration and Joping due to Clément, which have already been published more than once, are less useful than Fowler's graphical method (*cf. J.*, 1919, 317), and might have been omitted, as well as some of the ancient formulæ dating back to the infancy of the industry. There is an interesting section on the Thomson displacement process in which the author sums up strongly against its applicability to the manufacture of nitrocellulose intended for celluloid manufacture. The last two chapters deal with stabilisation, washing, pulping, and bleaching, and due emphasis is placed on the necessity for using pure water and for avoiding any process which will injuriously affect the colour of the product. This important distinction between explosives practice and celluloid practice is not always appreciated.

There are no illustrations of plant in the book, which detracts from its usefulness. The type is good and only a few misprints have been encountered, among which "Van T. Hoff" has a quaintly American flavour. It is to be hoped that in the succeeding volumes M. Dubosc will break away still further from the tradition that books on nitrocellulose should be merely abstracts of patents of varying vitality, and will discuss the problems of celluloid manufacture in the light of his own unquestioned experience.

F. SPROXTON.

INDIAN TANSTUFFS. By J. A. PILGRIM, *Government of India, Board of Industries and Munitions. (Calcutta: Superintendent Government Printing, India, 1920.) Price 6 annas.*

The Government of India is to be congratulated on the production of a short, concise report of valuable chemical research in which the practical and commercial application of results is not overlooked. Mr. Pilgrim's handbook contains the results up to April, 1920, of his and Mr. W. Fraymouth's examination of the barks, leaves, fruit, etc. of Indian forest species, mainly from the point of view of manufacture of tannin extracts for export. The requirements of the Indian tanner, *i.e.*, cheap tanstuffs to be used in direct contact with the hide, are also not lost sight of. With the exception of one or two species, which are duly noted, many samples of each tanstuff have been examined, and it is evident that the sampling of each bark or leaf has been carried out with great care, thus greatly increasing the value of the conclusions arrived at. Hide-powder estimation of tannin is not an exact analysis, but if used as Mr. Pilgrim evidently uses it, it is of great value in determining the tannin value of barks, etc. We consider the publication of negative results, *e.g.*, those on pages 24 and 25, as of great value. It is not always appreciated that negative results are as valuable as positive results in research work.

Analyses and practical leather-making have established the value of Thawai (*Woodfordia floribunda*) bark, and if this could be produced at a low price in quantities, it is clear that it would threaten the consumption of South African wattle. It is to be regretted that the present bulletin does not contain figures of cost of the tanstuffs as the earlier bulletin did. It would be best to express these in shillings per unit of tannin per ton, free on rail in India. This applies also to a recent report in a trade paper showing extraordinarily favourable figures of tannin and non-tans in certain oak and chestnut barks which have been studied in Northern Burma (presumably by Mr. Pilgrim). Nothing whatever is said of the distance from the rail at which the forests of these trees are found, nor whether labour is available at reasonable prices for collecting the barks. Mr. Pilgrim continues the practice of examining samples of bark from each part of the tree, and we would urge that a full range, from bole, low branches, high branches, twigs, etc., should be studied in every case where the first examination demonstrates the possibility of a valuable source of tannin.

The principle adopted in the earlier researches at Maihar, *viz.*, to collect the tanstuff without destruction of the tree, appears to have been less rigorously followed in the later work recorded in this report. The history of the tanner's bark has always been the same. A cheap and good bark becomes expensive as the demand grows and as the most accessible forests are depleted. It was so with English oak, with hemlock, and now with South African wattle, although in this case the bark exploiters have replanted vigorously. It appears probable that, other conditions being equal, the bark which can be got without destroying the trees will finally hold the market.

In a thoughtful preface Mr. Pilgrim explains his principles in studying Indian tannins from the point of view of extract-making. Unfortunately he adopts the standard of "crystals." It is a fact that all the biggest tanners, in Britain at any rate, if they use solid extract at all, demand a clean-fracture solid which generally contains more moisture than the 5 per cent. carried in "crystals."

The extent and resources of the forests of the Indian Empire are as yet little known in Britain, but now that the Forest Research Institute at Dehra Dun has received bigger grants and has engaged several new scientific officers, it is to be