soon as possible after their receipt. When fresh, these explosives, if properly detonated, have the advantage of producing only small quantities of poisonous and inflammable gases, and are adapted for mines that are not unusually wet, and also for mines and working places that are not well ventilated.

Class 2, hydrated explosives.—To class 2 belong all explosives in which salts containing water of crystallization are the characteristic materials. The explosives of this class are somewhat similar in composition to the ordinary low-grade dynamites, except that one or more salts containing water of crystallization are added to reduce the flame temperature. They are easily detonated, produce only small quantities of poisonous gases, and most of them can be used successfully in damp working places.

Class 3, organic nitrate explosives.—To this class belong all the explosives in which the characteristic material is an organic nitrate other than nitroglycerin. The permissible explosives listed under class 3 are nitrostarch explosives. They produce small quantities of poisonous gases on detonation.

Class 4, nitroglycerin explosives.—To class 4 belong all the explosives in which the characteristic material is nitroglycerin. These explosives contain free water or an excess of carbon, which is added to reduce the flame temperature. A few explosives of this class contain salts that reduce the strength and shattering effect of the explosives on detonation. The nitroglycerin explosives have the advantages of detonating easily and of not being readily affected by moisture. On detonation some of them produce poisonous and inflammable gases equal in quantity to those produced by black blasting powder, and for this reason they should not be used in working places that are not well ventilated.

REINFORCED CONCRETE RAILWAY SLEEPERS.

The increasing cost of wood is mainly responsible for the introduction of reinforced concrete as a substitute for wooden sleepers. In a paper published late in 1913 in "De Ingenieur," The Hague, M. Von Jockin outlines the development of sleeper-design in various countries, and dwells on the difficulty of securing sufficient bearing-area under the rail to prevent crushing of the concrete, and under the sleeper to prevent crushing of the ballast. The questions of stiffness and economy by reducing the sectional area of the sleeper in the centre are touched on. It is shown that increased stability to the track is secured by widening the sleeper under the rail; this prevents the latter from rocking under the live-load. This construction leads to the reintroduction of longitudinal sleepers. The author points out that the former objections to longitudinal sleepers no longer apply where concrete is used, for the following reasons: (1) By employing concrete sufficient width can be given to the sleeper-bottom to prevent the crushing of ballast; (2) the natural qualities of concrete are such as to give sufficient stiffness with a minimum cross-section; (3) drainage of the track can be secured by leaving openings in the sleeper, which can only be effectively done where reinforced concrete is used; with wood or iron the sleeper would be seriously weakened. Further advantages, such as prevention of creeping, durability and accessibility, are mentioned. This type of construction has been successfully tried in Holland and Java.

DEMAND IN GREAT BRITAIN FOR IRON AND STEEL PRODUCTS.

THE weekly bulletin issued by the Department of Trade and Commerce at Ottawa calls especial attention to the demand for iron and steel in Great Britain. Mr. J. E. Ray, Canadian trade commissioner at Birmingham, reports that in his district, during the last few weeks over thirty firms have inquired for constructional steel, rods, wire nails, etc., and according to iron exchange reports, in spite of the large orders placed with United States firms, buyers are experiencing great difficulty in obtaining supplies. The time is certainly opportune for Canadian manufacturers to send their representatives into the district, men who have a thorough technical knowledge of their subject.

Mr. Ray states in his report that a sample steel rod had just been received from Canada, that it had been thoroughly tested by one of the large steel firms near Birmingham and reported upon favorably. Furthermore, the quotation accompanying the sample was competitive.

Although the following tables are lengthy, they are quoted as illustrating the principal kinds of manufactures imported, the values and countries of origin. Special attention should be paid to European sources of supply, some of which have now ceased and others considerably diminished.

Metals and Ores, and Manufactures Thereof.

Iron: wrought, in bars, angles, rods, and sections—

	1913-14.
Russia	£ 2,827
Sweden	445,908
Germany	308,388
Belgium	593,642
France	2,000
Other foreign countries	11,490
Total from foreign countries	£1,364,255
Total from British Possessions	
Total	£1,364,255

Iron or steel: hoops and strips—

Sweden	£ 38,332
Germany	330,266
Netherlands	3,150
Belgium	76,805
United States	157,496
Other foreign countries	1,530
Total from foreign countries	£ 607,579
Total from British Possessions	£ 165
Total	£ 607,744

Tubes and pipes and fittings, wrought—

Sweden	£ 17,029
Germany	462,566
Netherlands	2,508
Belgium	69,526
France	4,790
United States	80,900
Other foreign countries	17,562
Total from foreign countries	£ 654,881
Total from British Possessions	£ 6,925
Total	£ 661,806