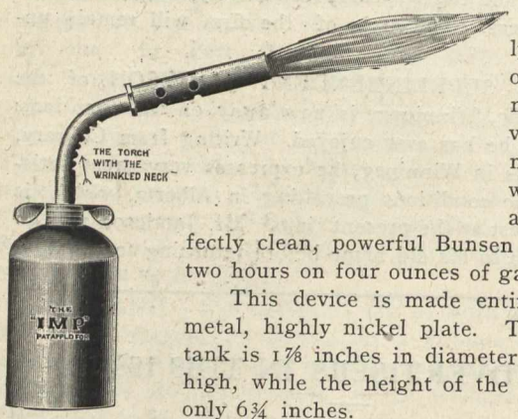
A POWERFUL GASOLINE BLOW TORCH.

The IMP Torch, shown in the accompanying illustration, is a patented device, which will do as much work as most of the larger torches, with the advantage of compactness, simplicity and cheapness.



It is entirely automatic in operation, has no pump or valve, needs no tools, starts with a match and gives a perfectly clean, powerful Bunsen flame for over two hours on four ounces of gasoline.

This device is made entirely of brass metal, highly nickel plate. The size of the tank is 1⅞ inches in diameter by 3⅛ inches high, while the height of the whole torch is only 6¾ inches.

The corrugated neck increases the heating surface to such an extent that the flame of a match easily generates gas enough for starting, after which the perfectly designed mixing-tube renders further attention unnecessary.

The IMP is sure to receive a hearty welcome from electricians, automobilists, the handy man, and, in fact, from anyone who wants clean, intense heat cheaply and quickly.

FERRO-CONCRETE IN LOCOMOTIVE DEPOT CONSTRUCTION.*

In respect of general design and arrangement it may fairly be said that British locomotive depots are worthy of acceptance as models by railway engineers in all parts of the world. But the materials and methods hitherto adopted in the construction of the roofs, smoke hoods, and flues of such buildings are scarcely worthy of equal commendation.

Owing to the rapid corrosion of metal exposed to the steam and sulphurous fumes, the life of structural steel work in locomotive sheds cannot be taken at more than about 15 years. Consequently the cost of maintenance and renewal has been found to be so heavy as to encourage a return to the employment of timber, a material whose durability and resistance to fire are increased rather than diminished by exposure to gases of the kind which cause injury to iron and steel.

Nevertheless, in buildings where the risk of fire is by no means small, and where the consequences of a serious fire would be fraught with much inconvenience and expense, apart from the monetary value of the structures destroyed, it is particularly desirable that the materials of construction should be capable of effective resistance both to fire and to corrosion.

Although this double qualification is clearly possessed by ferro-concrete, as proved by numerous practical tests, no railway engineer in this country has yet taken the initiative of employing it in locomotive depot design.

Less hesitation has been evinced in the United States and on the Continent in this direction, one of the best examples of construction being the depot of the Jura-Simplon Railway at Renens, near Lausanne, erected from the designs of Professor Bosset, acting for the State Service du Controle.

The result of investigation into the types of locomotive sheds favored by railway companies in different countries induced Professor Bosset to recommend the British form of design, with the proviso that all parts usually built in steel or timber should be of ferro-concrete.

Having adopted the type of depot with parallel tracks, it was easy to provide for flat roofing with openings at regular intervals for glazed lanterns. The problem of reproducing the smoke hoods and flues in the material selected was solved by moulding the hoods with thin side plates of fine concrete suitably reinforced, suspended from the roof by steel rods capable of adjustment by turnbuckles. Sockets were formed in the roof slabs to receive the upper end of the hoods and the lower end of the smoke flues, each of the latter being fitted with a butterfly valve and finished by a weather cone.

No difficulty was presented by the design of the terrace roof and lanterns, but it may be mentioned that special precautions were taken to preclude the penetration of rainwater into the joints of the smoke flues, and all the gutters were lined with sheet zinc with expansion joints, this provision being thought desirable in view of the considerable variations of temperature prevailing and the great length of the guttering. The zinc was laid on strips of bitumenized paper, for the purpose of permitting the metal to move freely under the influence of temperature variations.

All details of the ferro-concrete work were executed in general accordance with the Hennebique system, and the experience of several years has amply justified the selection of the material and method of construction adopted by Professor Bosset.

It is more than a little surprising that British railway engineers should adhere so faithfully to materials of a perishable nature in the design of locomotive depots. In buildings of that class one would naturally expect to find every detail constructed so as to be capable of withstanding the corrosive vapour and fumes which work such havoc in steelwork, and to be capable of affording full protection against the risk of fire. In the course of a few years, however, we may find railway engineers wondering why they persisted so long in using steel and timber for structures where ferro-concrete is admittedly superior in every respect.

*An engineering correspondent in The Times.

The engineering and electrical exhibit at the Canadian National Exhibition, which commences on August 29th and ends September 14th, will be especially interesting this year. The manager, Dr. Orr, states that every inch of space has been applied for, and that he is having considerable difficulty in arranging the requirements of the different would-be exhibitors. Of course, as time goes on, there are one or two who drop out, and, therefore, while there is usually a waiting list, it frequently happens that firms who at first had little hope of being admitted are ultimately found room for. This year the same state of affairs prevails, only to a little greater extent. The American Foundryman's Exhibition, recently held in Toronto, attracted the attention of several firms of importance, with the result that two or three decided to exhibit at the Canadian National on an extensive scale. The consequence is that there are rather more applications for space than usual. Among the prominent exhibitors are The Hawley Down Draft Furnace Company and the Quartz Crucible Company, both of Chicago, who will show convertibles and crucibles for the first time at any Exhibition in Canada. Altogether, there is no doubt but that the engineering and electrical exhibit will be well above the average standard.

NEW LOCOMOTIVES.

A short time ago we mentioned that the C.P.R. had placed an order for twenty locomotives with the Locomotive and Machine Company of Montreal. These locomotives are to be delivered in September and of the following dimensions and fitted with special equipment:

Type of locomotive	Consolidation.	10-wheel.
Weight on drivers	168,000 lbs.	142,000 lbs.
Total weight of engine	192,000 lbs.	190,000 lbs.
Driving wheel base	15 ft. 10 in.	14 ft. 10 in.
Total wheel base, engine	24 ft. 4½ in.	26 ft. 1 in.
Total wheel base, engine and tender	53 ft. 3¾ in.	54 ft. 6½ in.
Cylinders	22½ x 28 in.	22½ x 28 in.
Piston valves, diameter	11 in.	11 in.
Drivers, diameter	58 in.	63 in.
Driving journals	Main 9½ in.; others 12 in.	Main 9½ in.; others 12 in.
Working steam pressure	180 lbs.	180 lbs.
Boiler, type of	Ext. wagon top, radial stay.	Ext. wagon top, radial stay.
Firebox, length	96⅝ in.	102⅛ in.
Firebox, width	65¼ in.	69⅞ in.
Tubes, number and diameter	240 2-in., 24 5-in.	240 2-in., 24 5-in.
Tubes, length	14 ft. 2½ in.	14 ft. 4 in.
Tank, capacity	5,000 Imp. gals.	5,000 Imp. gals.
Coal capacity	10 tons.	10 tons.
Brakes	Westinghouse.	Westinghouse.
Brake-beams	Simplex.	Simplex.
Couplers	Tower	Tower.
Valve gear	Walschaert.	Walschaert.
Superheater	Vaughan-Horsey.	Vaughan-Horsey.