III-*b*

Liége, Septembre 1930.

CONGRÈS INTERNATIONAL DE LA CONSTRUCTION MÉTALLIQUE
INTERNATIONAL CONGRESS FOR METALLIC STRUCTURES
INTERNATIONALER KONGRESS FÜR EISENBAU

First welded structures in Poland

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Editions " LA TECHNIQUE DES TRAVAUX "
196, Rue Grétry
LIEGE

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In the article about the bridge over the river Sludwia it was mentioned, that Poland belongs to these european countries, in which the arc welding ofsteel structures was admitted by official bodies. In the following lines some of these structures will be described. All of them were designed by the author.

The skylights in the Building of the Universal Insurance Institute in Warsaw. Two areas were to be covered : a rectangle one of 12,00 × 4,00 and another round of a diameter 5,00 m. They were executed in the following manner : The parts of the construction, lying in the same planes, were arcwelded in the shop, brought together on the place, and finally oxy-acetylene welded together. The welding of the construction has prouved itself very good especially when building the round skylight. A riveted construction with very sharp angles would demand either gussets, which would darken the roof or the flanges ought to be bent in different planes, or many cuttings in the tee-irons would be necessary. The welding allowed a very light and elegant solution.

The first welded roof in Poland was the roof of the factory Perun in Skarzysko (fig 1) Welding instead of riveting was used because of necessity of a quick execution Also a saving on weight of about 30% was gained The roof trusses have a span of 12 m.; the upper and lower chord are of a T-iron N° 12, and N° 10. Also the middle diagonals are T-irons because of a better joint; all the others diagonals are angle-irons.

The joints of these diagonals with the chords were executed as side-welds, the dimensions and lenghts of which were admitted accordingly to the internal stresses and to the position of the neutral axis. In the assemblage points 3 and 5 have both angles common welds. The diagonals 7-8 and 6-8 were x-butt welded; also the bars 5-7 and 7-8 in 7.

In the support point both chords were x-welded. To obtain the base a plate iron was additionaly welded, to which a second one was horizontally

Fig. 1.

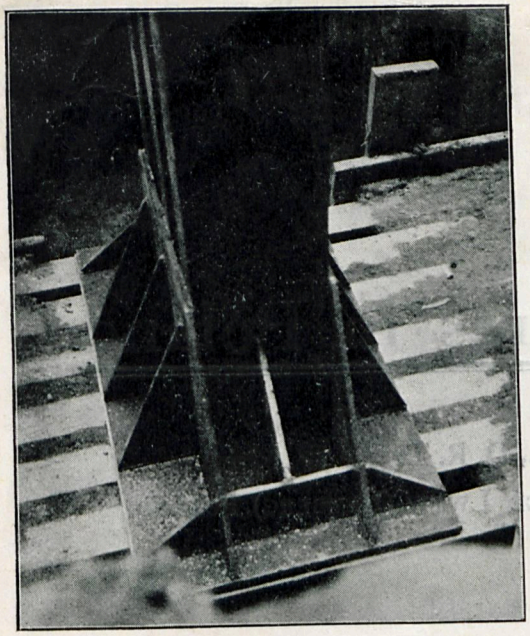

Fig. 2.

welded. Vertical or nearly vertical stiffenings of plate irons were added.

The joining of the parts 178 and 1′7′8′ was executed on the place of erection, the upper chord was butt-welded and a small piece of a T-iron added. Afterwards the bar 78 was joined with both triangle parts. In the middle of this a double T-iron of 2 angle irons was hanged.

The bearings also consist of 15 mm. event. 20 mm. plate irons, welded together. Side ribs are together welded flat-irons too. On the fixed bearing is the horizontal plat of the roof girder welded to the bearing, on the movable one it is lying free.

The purlins are fixed with the aid of triangle plates welded to the trusses in the work shop and to the purlins on the field.

There is another welded roof in the same factory ; it is a small cantilever one with a free length of 2.00 m. It was executed in the following manner :

The double T-irons N° 12 were cut along in the middle of the height on almost all their length exceptly 700 mm. on one end with the aid of the oxy-acetylene flame ; the lower part was bent out. The whole was stiffened with the aid of flat irons and angles. This little cantilever roof shows the great possibilities of the welded constructions.

In the same factory many other smaller constructions were welded together, as the tank, the doors, windows, railing, etc.

As the largest welded steel building, which was begun in the last months, the Postal Saving Bank in Warsaw is to be mentioned. It is an 9-stories building (two basement-floors, the ground floor and 6 upper floors) it will be executed as a steel-squelett welded construction, totally in one part of the building and in its lower floors in another. This second part is now under execution. Its steel welded columns are in the basement-floors, in the ground floor and the first floor and will carry the upper construction in bricks.

The basement-columns consist of two channels and of one doubletee-iron. The brace-plates consist of plat irons welded to the columns as in the riveted columns it would be ; the bases and the tops of the columns differ very much from the riveted ones and they resemble much more to the monolitic cast iron columns. Beside the trapezoidal plates which are connecting the three girders, there were welded to them and to the base triangle plates, to stiffen the base in both directions. It is to be seen easily that this reinforcement is much stronger than the ordinary one of the riveted columns.

The figure 3 show the whole during execution and the details of the construction.

It is to be mentioned, that other larger welded buildings are proposed in Poland.

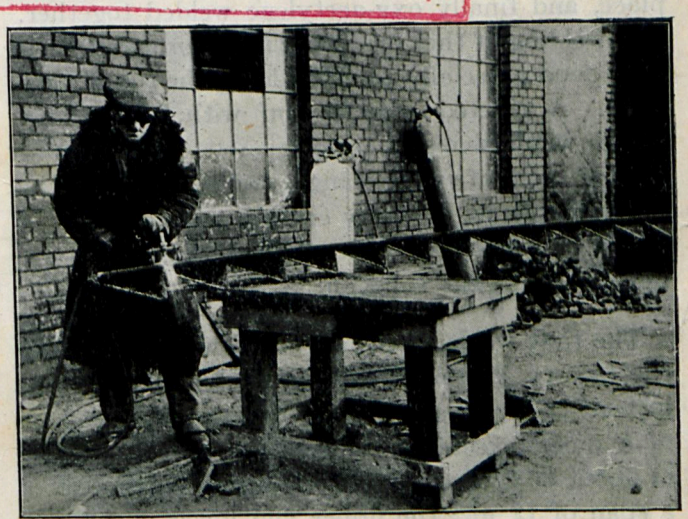

Fig. 3. — *Cutting I-beams into small triangles.*

9037. Imprimé en Belgique à la Maison Desoer, Liége.