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LA STABILITÉ DE L'ÂME DES POUTRES SOLLICITÉES A LA FLEXION
DIE STABILITÄT DER STEGBLECHE VON BIEGUNGSTRÄGERN
STABILITY OF PLATE GIRDERS SUBJECTED TO BENDING

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Voir aussi « Publication Préliminaire », p. 129. — *Siehe auch « Vorbericht », S. 129.* —
See also " Preliminary Publication ", p. 129.

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In discussing the elastic stability of the web of a plate girder we have to consider two extreme cases : 1) the pure bending and 2) the pure shear of a rectangular plate.

At the middle of the span the bending stresses in the web are of primary importance and a portion of the web between the two stiffeners should be considered as a rectangular plate submitted to pure bending in its plane. In a plate girder of usual proportions, the distances between the stiffeners are such that the stiffeners do not affect substantially the critical value of maximum bending stress. This critical stress must be taken as a basis for calculating the thickness of the web. Considering the web as a rectangular plate with simply supported edges and neglecting the effect of stiffeners, the critical value of maximum bending stress will be larger than the usual working stress (16,000 lbs. per sq. in.) if we satisfy the relation :

$$\frac{h}{t} = \frac{\text{depth of the web}}{\text{thickness of the web}} < 200 \quad (1)$$

When the thickness of the web has been determined by using equation (1) the distance between the stiffeners can be calculated by considering a portion of the web near the support as a rectangular plate submitted to the action of pure shear. The curves in figure 9 of the paper can be used for calculating the necessary distance between the stiffeners such that the desired factor of safety will be realised.

Table 10 of the paper gives the necessary data for proper dimensioning of the stiffeners.

Traduction.

Dans l'étude de la stabilité élastique de l'âme d'une poutre, deux cas extrêmes doivent être pris en considération :