is anchored near the outside of the plot. An inch and an eighth cable is passed through the pulley at the top of the gin pole and hitched to the stumps in turn, each of which is hauled to the big pile which soon surrounds the base of the pole. When all the stumps have been drawn to the pile the whole is fired and the small refuse cleaned up and burned before the land is ready for grading.

The cost of operating one machine for a week, during which time an average of four acres is cleared, is as follows:

Engineer, per week	$ 23.00
Fireman	12.00
Hook tender	24.00
Assistant tender	21.00
Signalman	18.00
Line assistant	21.00
Shovelman	12.00
Laborer	12.00
Water team	16.00
Wood, 15 cords at $3.80	57.00
Powder	200.00
Dynamite	15.00
Fuse	7.00
Caps	1.00
Total for four acres	$439.00

Cost per acre, $109.75.

Added to the above is the cost of slashing the small growth which is put at $50 an acre, and the final gleaning which can usually be done for $10 an acre. This makes a grand total of $169.75 per acre for making the land ready for grading, or in the case of agriculture, ready for plowing.

About two days is usually taken in moving from one plot of land to another, including the setting up of the gin pole, anchoring and making ready for starting. There is a small cost which should be allowed for burning the piles amounting to nearly ten dollars an acre, but which will probably be covered by the conservative estimates on the other items.

Sixty horse-power donkey engine	$3,750.00
1,300 feet 1¼ in. wire cable	400.00
4,000 feet ⅝ in. haul-back rope	300.00
Other sundries	100.00
Total	$4,550.00

ELECTRIC RAILWAY EXTENSION IN 1909.

During 1909 the extensions made on thirteen electric roads in Canada totalled about fifty miles. They are as follows:—

	Miles.
British Columbia Electric Railway	17.00
Calgary Street Railway	5.00
Chatham, Wallaceburg and Lake Erie	4.00
Edmonton Radial	5.20
Hull Electric	2.25
International Transit Co.	0.31
Montreal & Southern Railway	5.00
Montreal Street	1.60
Montreal Park & Island Railway	5.35
Port Arthur & Fort William Railway	2.50
Sarnia Street	.34
Winnipeg Electric Railway	4.07
York Radials	1.15
Total	53.77

PROBLEMS IN APPLIED STATICS.

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This series of problems began in the issue for the week, October 22nd, 1909. It is assumed that the reader either has an elementary knowledge of the subject of Statics, or is in a position to read some text on such theory.

Stress Diagram.

Fig. 128 is the complete Stress Diagram for the left-hand half of the Fink Truss as shown in Fig. 128A. It will merely be necessary to point out the various Vector Polygons in this diagram since the construction of these polygons has been already gone through.

MA, AE, and EM (Fig. 128) evidently form a Vector Polygon for the forces acting at **the point MAE.** (See Figs. 114 and 115.)
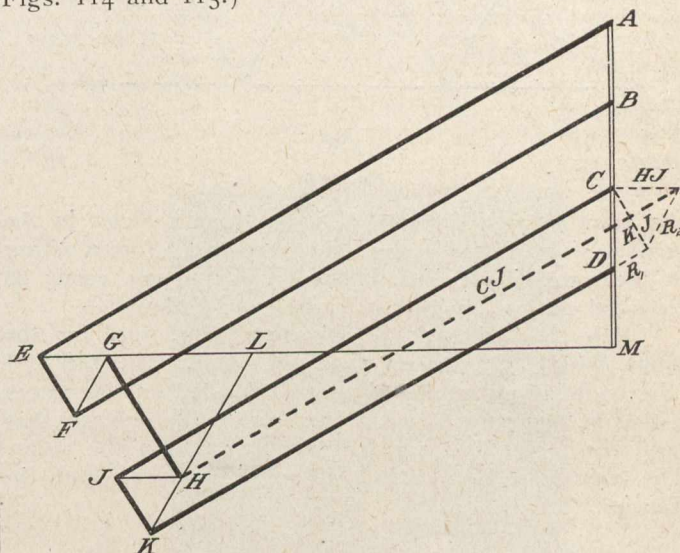

Fig. 128.

Considering **the point EABF**, the Vector Polygon reads on Fig. 128: EA, AB, BF, and FE. (Compare with Fig. 117.)

Coming next to **the point MEFG** (see Figs. 118 and 119), ME, EF, FG, and GM (Fig. 128) form a Vector Polygon for the forces acting at this point.

From B, on the line MA, lay off BC to represent the load BC. Then from C, on the same line, lay off CD to represent the load CD.

Consider **the point KJCD.** Replacing DK and JC by their resultant R₁, it is seen that CD, R₁ (dotted), and KJ (dotted) form the Vector Polgon for the forces indicated in Statical Diagram, Fig. 121.

Following out the same method for **the point JKLH**, replacing KL and LH by their resultant R₂, which gives a condition indicated in Statical Diagram (Fig. 124), it is evident that JK (dotted), R₂ (dotted), and HJ (dotted) (Fig. 128) form the Vector Polygon for the forces being discussed. (Compare with Fig. 125.)

From a consideration of the forces acting at **the point GFBCJH**, it is seen that GF, FB, BC, JH (dotted line), CJ (dotted line), and HG (Fig. 128) form a Vector Polygon for the forces being discussed. Bow's Notation, however, could not be fully carried out for reasons already given.

Reconstructing the Vector Polygon for this point so that Bow's Notation may be applied throughout, a poly-