

## ENGINEERS' COMPETITION.

THE publisher of the ELECTRICAL NEWS invites engineers throughout Canada to compete for the solution of the following problems:

1. What is a horse power as applied to a boiler?
  2. How much is gained if feed water can be had at 120° temperature instead of 40°?
  3. With water at 40° fed into the boilers, and steam taken off at 90 lbs. pressure, how much coal should be required for each thousand gallons of water used?
  4. What would be the safe working pressure for a horizontal tubular boiler, 64 in. diam., 14 feet long, with 90 tubes, 3 in. diam., shell made of 60,000 lbs. steel plates  $\frac{3}{16}$  in. thick, and double rivetted in longitudinal seams?
  5. Give size of furnace for soft coal for such a boiler, and size of smoke pipe, and area and height of chimney for a range of six boilers of same dimension?
  6. An engine has cylinder 18 in. diam. and 18 in. stroke, and makes 240 revolutions per minute. Steam is supplied at 90 lbs. pressure in boilers, 30 feet away. What size should steam pipe be?
  7. With steam cut off in above engine at  $\frac{1}{16}$  in. of the stroke, and discharged into a heater open to the atmosphere, what horse power can be got?
  8. If a condenser be added, maintaining a vacuum of 26 in. on the gauge at the condenser, what additional power could be got from engine?
  9. What difference to the amount of fuel per horse power per hour should there be between above engine using a heater giving water at 190° and using a condenser, maintaining a vacuum of 26 in., and supplying feed water at 100°?
  10. If engine speed varied while the pressure of steam and load were constant, what should be done to remedy the defect?
  11. In a high speed automatic cut-off engine, what is the effect of the weight of the reciprocating parts on the steadiness of motion?
  12. The duty of the governor is said to be to regulate the speed; upon what conditions does its power to regulate depend?
  13. What are the advantages of "compression" in the steam cylinder?
  14. Describe the defects in the annexed diagram, and state what should be done to remedy them.
- Cash prizes of \$15 and \$10 respectively will be paid to the competitors whose answers to the above questions shall be found by the judges to be deserving of the highest number of marks, and who shall have complied with the under-mentioned conditions.

## CONDITIONS OF COMPETITION.

1st. Competition is open only to subscribers to this journal actually engaged in the charge of steam boilers or engines within the Dominion of Canada.

2nd. Answers must be received at the office of the ELECTRICAL NEWS, not later than April 15th, marked "Engineers' Competition."

3rd. The answers will be judged and marked by points, in accordance with the merits of each.

4. Allowance will be made for neatness of writing, etc., as well as for correctness of answers.

5th. As a guarantee that answers are from the men intended, each competitor must send with his paper the name and address of his employer.

Messrs. Geo. C. Robb, Chief Engineer of the Boiler Inspection and Insurance Co., Toronto, and Mr. A. M. Wickens, ex-President Toronto Branch No. 1, Canadian Association of Stationary Engineers, have kindly consented to act as judges in this competition, and their decision will be final.

## PUBLICATIONS.

The first number of a new trade paper entitled *The Canadian Dry Goods Review*, published monthly at Toronto by the Dry Goods Review Co., is received. It is very creditable to the publishers. We wish the new comer a long and prosperous career.

We have received the initial number of the *Canadian Miller*, published monthly by Mr. A. G. Mortimer, Canada Life Buildings, Toronto, price 51 per year. The *Miller* consists of 22 pages of matter well calculated to interest and instruct those engaged in the milling, grain and flour trades.

The February *Trend* in addition to a brilliant array of American authors, presents two papers of great interest for foreign essayists. Camille Flammarion, probably the most eminent European astronomer, writes at length on "New Discoveries on Mars." His paper is accompanied with a full-page geographical map of this wonderful star, as prepared by Flammarion and other leading astronomers. It also contains two small maps illustrating changes that have recently taken place on one portion of Mars. The distinguished Frenchman's paper in the short compass of sixteen pages gives the busy reader the important astronomical discoveries of recent years in a nutshell.

## RECENT CANADIAN PATENTS.

|              |                                              |
|--------------|----------------------------------------------|
| No. 35554    | A. Davis, Elevated electric cable            |
| No. 35561    | J. E. Wilson, Steam boiler                   |
| No. 35572    | C. J. Van De Poele, Electric conductors.     |
| No. 35575    | S. Thring, Water gauge.                      |
| No. 35584    | C. J. Van De Poele, Reciprocating elec. eng. |
| No. 35585    | " " " " " "                                  |
| No. 35586    | " " " " " "                                  |
| No. 35587    | " " " " " "                                  |
| No. 35594    | W. Kinsley, Belt fastener.                   |
| No. 35599    | N. H. Edgerton, Steam engine                 |
| No. 35618    | C. D. Howard, Draft regulator.               |
| No. 35630-19 | G. A. Sanders, Electric gas lighters.        |
| No. 35640    | H. Gilmore, Tube cleaner.                    |
| No. 35647    | J. G. Gangee, Steam boiler.                  |
| No. 35672    | G. W. Dryden, Pulley.                        |

## NOTES.

Messrs. Connell Bros., of Woodstock, N. B., are about to engage in the manufacture of steam engines.

It is proposed to incorporate as a limited liability concern, with a capital stock of \$700,000, the well known manufacturing firm of Goldie & McCulloch, of Galt, Ont.

On the 28th inst. the Manager of the Edison Company at Toronto received the following telegram from Winnipeg: "First Edison Canadian electric car has started. We send congratulations. A grand success." The despatch was signed by Mr. A. W. Austen, Manager Winnipeg Street Railway Co.

Letters of incorporation have been granted the John Doty Engine Co., of Toronto, (Ltd.), with a capital stock of \$250,000. The members of the Company are: John Doty, Franklin Henry Doty, Frederick William Doty, Daniel Hunter and John Franklin Walshe, all of Toronto.

The engines of the Steamers Spartan and Corcian, of the Richleau & Ontario Navigation Line, are to be compounded and new boilers are to take the place of those heretofore in use.

A cement for leaky boilers (steam or hot water) consists of two parts of powdered litharge, two parts of fine sand, and one part of slaked lime. Mix with boiled linseed oil and apply quickly.

A cheap and efficient lagging for steam pipes can be made out of some of the waste products of paper manufacture. The waste products in question are chiefly those coming from the different cleaning and sorting machines which are of a fibrous nature. When dry they are mixed with potter's earth in the proportion of four to one, enough water being added to make a plastic compound. This is spread by hand over the surface to be protected in thin successive layers. When dry the coating is said to adhere firmly, and it has additional recommendation of entailing no greater cost than that of mixing and applying it.

A deputation representing the Coal Importing Association and the Board of Trade, Montreal, waited on the Minister of Marine and Fisheries a few days ago and asked for the abolition of the existing system of boiler inspection on vessels carrying coal from Nova Scotia to Montreal, on the ground that the delay of 48 hours necessary for inspection causes great loss, and that British competition is thereby shut out, as the English vessels hold that Lloyd's inspection should be sufficient and refuse to submit to the Canadian regulations.

## CHIGNECTO MARINE TRANSPORT RAILWAY.

THE Canadian Locomotive and Engine Co., of Kingston, Ont., have kindly furnished us with the following particulars regarding the tank locomotive with eight coupled wheels, no truck, at present in course of construction at their works for the above railway:

Two of these locomotives abreast are to haul vessel on cradle 17 miles on a level and straight track at a speed of (10) ten miles an hour. Weight of cradle and vessel 2,500 tons (of 2,240 lbs.). Cradle carried on 120 four wheels trucks. Steel rails, 110 lbs. per yard; cylinders, 22" diam., 26" stroke; driving wheels, 47" diam., outside tyre; boiler working pressure, 175 lbs. per sq. inch; boiler, straight top, 59" diam.; tubes, 2" diam. Heating surface, 256 tubes, 1,741 sq. ft., firebox, 137 sq. ft.; total, 1,878 sq. ft. Grate area, 29 sq. ft. Total weight (all on drivers), 180,000 lbs., in working order. Capacity of tanks, 3,000 imp. gals. = 3,636 U. S. gals.