

NOTES.

Mr. John Thomson has been appointed inspector of boilers and machinery for the province of British Columbia.

When wood is to be the fuel employed under a boiler, the grate area should be from 25 to 40 per cent larger than if coal is to be used.

The Steam Boiler and Plate Glass Insurance Co., recently organized at London, Ont., has made application to Parliament for incorporation.

Mr. Frank Doty, of the Doty Engine Co., and Mr. Reid, of the firm of Reid & Currie, Toronto, recently paid a visit to the Northwest and British Columbia.

At a recent meeting of the executive committee of the Stationary Engineers of Montreal it was decided to amalgamate with the Canadian Association of Stationary Engineers.

Much regret is felt throughout western Ontario at the recent death of Mr. Geo. Marks, of London, who for thirty-five years was a locomotive engineer on the Great Western division of the G.T.R.

The Canadian Locomotive and Engine Co., of Kingston, are building two locomotives for the Chignecto Marine Transit railway which will weigh 100 tons each, and will probably be the largest locomotives in the world.

Aluminum wire is being used for calking steam pipes in New York with good success. A wire of $\frac{1}{4}$ inch diameter is used, one turn of aluminum wire being first inserted, followed by four or five turns of a lead wire of slightly larger diameter, these last being calked in the usual manner. It is found that aluminum does not cut, and is not acted upon by the steam as the lead is, so that joints remain tight much better.

Recently experiments have been made with high pressure steam to determine its dryness, in which a match is held in the issuing jet. Where the steam is dry the match will ignite, but any moisture will, of course, prevent it. It is an indication merely of the state of the steam issuing, which may be dry through wire drawing, while in reality wet when it leaves the boiler. Whether or not steam is wet is a matter of importance to the engineer when testing his plant. We note a number of boiler tests reported recently showing exceptionally good work in which no account was made of the moisture. It makes a great difference whether you evaporate all the water put into a boiler or send a portion of it through the engine without ever being made into steam.

Steam gauges are often placed in queer places, and, in many instances, without regard to the necessity of following certain directions in setting them up. *The Locomotive* reports finding steam gauges so arranged that their indications are necessarily a number of pounds in error, owing to the static pressure of water of condensation in the connection. While the error does not ordinarily exceed two or three pounds, it sometimes is far greater than this, and becomes of grave importance, especially in low-pressure systems. We met with a case recently in which an ordinary heating boiler was in the basement, and the gauge was in the owner's room on the third floor, fully twenty-five feet above. The piping was so arranged that it was an easy matter for it to fill up with water condensed from steam, so that the indication of the gauge might be as much as ten pounds less than the actual pressure in the boiler. Such a gauge, it need hardly be said, is no better than none at all. In fact, it becomes a positive source of danger.

A paper was recently read before the Halifax, N.S., Institute of Science, by D. W. Robb, M.E., of Amherst, on "Steam Boiler Tests as a Means of Determining the Calorific Value of Fuels." The author said there are three methods of determining their calorific value—(1), by chemical analysis, (2), by the use of the calorimeter, (3), by direct measurement of the water, evaporated by a definite amount of fuel in a steam generator. He pointed out the difficulties and sources of error in the first two. The third is generally regarded as a test of the efficiency of the generator, but experience shows that it is quite as valuable for determining the calorific value of a fuel. In using it there are two sources of error—(1), through imperfect combustion of the fuel, (2), through escape of gases at a high temperature. Practically these errors may be largely excluded, experience showing that almost perfect combustion may be secured by careful stoking, and that the gases may be reduced to a known minimum temperature before escaping and may be made to register their volume on escaping. It is not of much consequence what kind of generator is used, a water-lined furnace being quite as good for the purpose as a brick furnace. Steam boiler tests are quite within the reach of ordinary consumers and should be more generally used. Owing to the deterioration of boilers they should be made frequently. They may be made by ordinary assistants, but an occasional test should be made by a professional engineer. The author suggested as good practice in the use of steam engines, the recording of the amount of water used by a water meter and the regular weighing of the coals consumed. Such practice would indicate constantly the condition of the boiler, would form a check on the working of the engine and would furnish a constant incentive to the men in charge to improve the working of the engine and reduce the consumption of fuel to its lowest limit. Detailed statements were given of the way in which such tests should be made and of the manner in which the results should be registered.

PERSONAL.

Mr. Rosebrugh, B.A., an honor graduate of Toronto University, and also a graduate of the School of Practical Science, Toronto, has been engaged by the management of the latter institution to give a portion of the instruction in mechanical engineering and take general charge of the testing machines, experimental engines and other testing apparatus. Mr. Rosebrugh is said to have devoted much attention to the subject of electricity.

RECENT CANADIAN PATENTS.

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| No. 35323. | Jas. F. McElroy, Pressure regulator. |
| No. 35335. | J. Blair, Connecting carbon pencil. |
| No. 35337. | M. Burt, Galvanic battery. |
| No. 35349. | T. Stettson, Insulating conductor |
| No. 35358. | J. P. Hebedalt, Elevating and lowering electric light |
| No. 35372. | W. Blakely, Engine lever and handle. |
| No. 35391-10. | G. Weems, Moving goods by electricity. |
| No. 35400. | G. Plankueche, Dynamo. |
| No. 35406. | A. Woodbury, Air current. |
| No. 35438. | J. Van Depoele, Pulsating electric generator. |
| No. 35449-20. | R. Earle, Air and steam injector. |
| No. 35455. | Jos. Van Depoele, Pulsating current system. |
| No. 35456. | " " Conv't'g cont. into pul. |
| No. 35457. | " " Multiple cur. pul. gen. |
| No. 35458. | " " Alternate cu. pul. gen. |
| No. 35459. | " " Alternating cur. elec. recip'g engine. |
| No. 35460. | " " Recip'g cur. elec. engine system. |
| No. 35475. | H. Dow, Rotary steam engine. |
| No. 35478-22. | F. Leadbeater, Low water alarm. |

STORAGE BATTERY STREET CARS AS A BUSINESS ENTERPRISE.

WE learn from the *New York Electrical Review* that the Metropolitan Street Railroad Co., Washington, has decided to change the entire equipment of its main line from horse cars to storage battery cars. It is now building the first installment of cars and preparing to commence the erection of an extensive power station. This will be located on Rock Creek, between Washington and Georgetown, where the company some time ago purchased a large block of land adjoining its present stables. About 40 cars will be required on this line, and they will be put in operation, probably in lots of five, as fast as they can be got ready and as soon as the station is started. Engineer Mailloux's motors and gearing will be used. This part of the equipment is to be manufactured at Baltimore by Mr. G. W. S. Baker, president of the Baltimore Car Wheel Co., who has established a factory for the business. It is expected the first cars will be running in the course of three or four months. This undertaking has been decided upon after the most thorough and exhaustive investigation of the whole subject of street car propulsion and nearly a year's experimenting with Mr. Mailloux's invention and the Accumulator Co.'s batteries. President Pearson is one of the most experienced and successful street railway managers in the country, and he has satisfied himself and his stockholders that they have caught up with the "motor of the future."

TEMPERED COPPER FOR ELECTRICAL PURPOSES.

IN the construction of electrical apparatus copper enters largely, and thus far nothing has been found which could, with any degree of success, be substituted for it. And not only in the construction of machines and appliances is it used, it is the material of which is composed the millions of miles of conductors for electric currents all over the world. For some purposes the ordinary, common, commercial copper is too soft, and wears away too rapidly, so to avoid this tempered copper has found its way into the market. Some recent tests of this material, made by the sub-committee on Science and the Arts, of the Franklin Institute, contain some points of interest to central station managers who are quite willing to have the best material for the commutators of their dynamos, and those who are engaged in the manufacture of electrical appliances. In this examination chemical tests were made showing the article in question to be commercially pure copper, and various tests were made—tensile, transverse, torsion, and compression of both tempered and untempered copper as well—the results generally being in favor of the former, though in some respects there is little to choose between them. Some interesting facts were brought out by letters sent by the committee to various users of tempered copper, about sixty-five per cent. of the answers being of a favorable nature: the greater part of these, too, basing their answers upon their experience with tempered copper for commutator segments and brushes. This point is of most interest to those using dynamo electric machines, and while tempered copper is no new thing it certainly possesses excellent qualities. Anything which will render the operation of dynamo machines and motors more economical is certainly of value, and will, in time, as has been the case with other new things, come into general use.—*Modern Light and Heat.*