

be more generally applied. The Ball Electric Light Co., of Toronto, had an exhibit in Machinery Hall which was well calculated to show manufacturers the benefits to be derived from the use of this new and powerful illuminator.

PRESCOTT EMERY WHEEL CO.

This company occupied their old position opposite the western entrance to Machinery Hall. Their exhibit included emery polishers and grinders of every kind and for every purpose.

ROBIN & SADLER

Owing, we presume, to the crowded condition of Machinery Hall, Messrs. Robin & Sadler, the well-known leather belting manufacturers of Montreal and Toronto, occupied a position in the Main Building Annex, where they showed some excellent specimens of belting in various sizes, also a sample of a new waterproof belt which they have lately perfected and intend to manufacture in future. Mr. Sadler, whom we were pleased to meet on the grounds, stated that this waterproof belting is already in use in quite a number of mills, and with excellent results.

WATERFORD ELECTRIC LIGHT CO.

Among the new exhibitors in Machinery Hall this year was the Waterford Electric Light Co., of Waterford, Ont., who made a very fine display of lighting apparatus. This company, which has only been in operation about eight months, manufacture a dynamo which they claim gives unsurpassed results.

JOHN GILLIES & CO.

An increasing number of people are finding out the large amount of pleasure at a small expense which can be obtained in summer on board the tiny steam launches which the above firm turn out from their manufactory at Carleton Place, Ont. An exhibit of the little coal oil engines designed to propel these steam launches attracted a crowd of interested spectators continually to the north-east corner of Machinery Hall during the time of the Fair.

J. C. McLAREN BELTING CO.

Several belts manufactured by the J. C. McLaren Belting Co., of Montreal, were shown in actual service driving machinery. The company have lately commenced to manufacture a patent jointed leather belt, samples of which were also shown.

INGLIS & HUNTER.

This firm, whose name has become so familiar to many of our readers, exhibited one of their celebrated Corliss engines, a handsomely finished piece of mechanism, working in a manner so perfect as to delight the eye of the expert engineer. They also showed a Westinghouse engine.

HODGE WOOD SPLIT PULLEY CO.

The "Dodge wood split pulley" was introduced into Canada two or three years ago by the above company, and the fact that the manufacturers are putting up a large new factory at West Toronto Junction would seem to indicate that they are meeting with success. In Machinery Hall they showed a large number of pulleys of all sizes and adapted for all purposes.

PETER HAY.

Half a dozen rows of brightly polished machine knives, various in size and design, represented the character of the work supplied to Canadian wood-workers by Mr. Peter Hay, of Galt. This was the only exhibit of the kind that we noticed, and it was certainly a credit to the manufacturer.

CANADIAN RUBBER CO.

It would be difficult to enumerate the variety of uses to which rubber has been put during the past few years. Those, however, who inspected the Canadian Rubber Co.'s exhibit in the Main Building would go away with a better understanding of the part which this material is playing in the commercial and manufacturing world. The exhibit included a host of articles, from a lady's gossamer cloak to a ponderous roll of rubber belting capable of standing the strain of the heaviest machinery.

STAMM-SCHMIDT & CO.

The handsome furniture made by this firm, of Preston, Ont., manufacturers, which adorns so many business offices, church, school and lodge rooms in this and other countries, was a pleasing feature in the Main Building Annex.

METALLIC ROOFING CO.

Many a mill and factory has been set on fire by sparks from the smoke stack. Many an elevator has been burned as the result of sparks from a passing locomotive lodging on it. The metallic shingles manufactured by the above Toronto firm, and exhibited by them at the Exhibition, are admirable adapted to render such buildings secure against fire, besides lessening very considerably the cost of insurance.

DICK, RIDGOT & CO.

A mammoth canvass bag, the top of which was almost on a level with the roof of Machinery Hall, was a standing proclamation to the assembled thousands of the kind of goods manufactured by the above firm, whose praiseworthy enterprise is bringing its own reward. No doubt they "bagged" numerous orders as a result of their novel exhibit.

B. GREENING & CO

This well-known firm of Hamilton manufacturers had an interesting exhibit, and occupied a prominent position in the Main Building, near the chief entrance. The exhibit, which was in charge of Mr. Merriman, included perforated zinc from 1/32 to 1 inch round hole, besides a variety of other shapes, plated milling cloth wire, bran duster and full line of wire cloth; malt and oat kiln floors in perforated iron and wire cloth. In both wire cloth and perforated zinc floors a flush joint is made by bevelling down one edge and rivetting together. The firm also showed samples of office railing and patent wire lathing of their manufacture.

NOTES.

Messrs. Inglis & Hunter fully expected to have exhibited a full line of roller flour mill machinery, but were prevented from doing so by orders on hand for their "Case Short System" machinery.

BABBITTING ARBORS.

IF I were buying a saw mill outfit, writes Frank Jefferson to the *Southern Lumberman*, I would include in the purchase a set of forms for use in re-babbitting boxes. These forms, or babbitting arbors, need not be expensive, but there should be enough of them so that no saw arbor, or other high speed shaft, would ever have to endure the abuse of having melted metal poured around it, or, what is worse, half way round it. Such babbitting of the arbor will spring it every time. I have tried to remedy the matter by marking the arbor in such a way that I could make sure that I poured the bottom part of the box to one side, and the top part of the box to the opposite side of the arbor, hoping that the last would straighten the first, and I have tried pouring both parts of the box at once, but with only such indifferent success that nothing short of absolute necessity would induce me to pour melted metal against the journal of a new arbor. I have been told that such ideas were two fine-haired for saw mill work.

One man said that he always babbitted right on the arbor where the box belonged, and then he was sure of a good fit, and never had to scrape the box at all. "Why," said he, "I have had to do lots of babbitting in my mill, and it would never do to wait to scrape the box." He did have lots of babbitting to do, and did not know that the cause of so much need of re-babbitting was that he was running crooked journals in crooked boxes, and that the actual contact of the arbor with the box was not more than one-fourth of the length of the box when left as first poured. The short bearing surface is particularly noticeable in small, solid-frame arbor boxes. The inner ends of such boxes will be low on the bottom, the arbor bearing only a little at the outer ends, because the heat expands the lower side of the babbitting arbor, throwing the ends up, and the soft metal takes the same shape. Of course the special babbitting arbors will spring just as much as the real arbor will; but with the real arbor straight, it is an easy matter to put some red lead on its journals, try it in the boxes, and scrape accordingly, and, come to think of it, I would have an old half-round file, ground off smooth, with sharp edges and a rounding end, also included in my outfit, to be used in scraping boxes.

A good form can be made for a four inch arbor, by taking a bar of 1/4-inch round iron as long as the saw arbor is, and then where the journals would come, cast some iron sleeves to the right size, but do not file them; leave the tool marks, and the babbitt will not bubble and kick half as much as it will on a polished surface; but for a solid box, when the arbor has to be driven out endwise, the tool marks should not be too coarse. For small arbors, a piece of machinery steel, turned up round and true, is not a very expensive matter.

PUBLICATIONS.

THE *Times* is the name of a new evening daily paper, the publication of which has just been commenced in London, Ont. The *Times* presents a neat, newsy appearance, and we understand is under the management of experienced newspaper men, who have our best wishes for success.

The crop calculators state that Ontario will have 15,000,000 more grain than last year, and that at a great advance in price. If this should be the case, the business depression should take to itself wings and fly away.



England claims the largest electric light in the world. It is in the light-house at St. Catharines, and its capacity is 60,000 candle power.

The reeds and rushes of the lowlands of the Parana are destined to become of incalculable value for paper pulp, and as a fiber for textile fabrics.

The power of wrought iron to resist torsion being placed at 1, that of cast iron will be 9, cast steel 1.63, gun-metal .27 brass .25, copper .22, tin .13 and lead .1.

A good substance for bronze is composed of thirty parts of good brass (thirty-five parts of zinc, sixty-five parts of copper), sixteen parts of copper, four parts of phosphor-tin, No. 0.

A mixture of 10 parts of tin putty, 8 of prepared buckhorn, and 25 of spirits of wine, makes a good compound for taking the rust off drawing instruments, and will not injure them. They should be rubbed with soft blotting paper after this compound is applied.

Aluminium is one of the most difficult and uncertain of metals to deposit electrolytically. The following receipt is given by M. Herman Reinhold, who states that it furnishes excellent results: 50 parts by weight of alum are dissolved in 300 of water, and to this is added 10 parts of aluminium chloride. The solution is heated by 200 degrees F., and when cold 39 parts of cyanide of potassium are added. A feeble current should be used.

The Italian Admiralty have recently caused to be carried out a number of experiments with a view to testing the comparative merits of castor oil and of olive oil for lubricating purposes on board ship. From the results obtained they have given orders that henceforth all exposed parts of machinery are to be lubricated exclusively with castor oil, while mineral oils are to be used for cylinder and similar lubrication.

FRENCH GOLD SOLDER.—Precipitate copper in a state of fine division from a solution of sulphate of copper by the aid of metallic zinc. Twenty or thirty parts of the copper are mixed in a mortar with concentrated sulphuric acid, to which is afterwards added seventy parts of mercury, and the whole is triturated with the pestle. The amalgam produced is copiously washed with water to remove the sulphuric acid and is then left for twelve hours. When it is required for soldering it is warmed until it is about the consistency of wax, and in this state it is applied to the joint, to which it adheres on cooling.

Some very successful experiments in the way of breaking up steel castings have recently been performed at Messrs. Goodwin & Co.'s foundry, Ardrossan. The castings weighed in some instances as much as 8 1/2 tons, and having become useless, it was necessary that they should be broken up before they could be put into the cupola to be remelted. For this purpose Messrs. Goodwin engaged a few of the dock employes to try the experiment with dynamite. With the 3 1/2 ton mass they were unsuccessful on five different occasions. Eventually Mr. Daniel Blyth, who has been in the service of Nobel's Explosives Company for the long period of fourteen years, brought his wide experience to bear on the difficulty. He charged the largest casting, weighing 3 1/2 tons, with blasting gelatine, the explosion of which at once rent the casting into fragments. The result was eminently satisfactory.—*Iron*.

Mechanics who are beginning to learn the "book" part of their occupation often find difficulty in making computations of areas, contents and proportions. A few simple rules will greatly aid such persons, who lack the knowledge of mathematics that would enable them to compute easily. To find circumference: 1. Multiply the given diameter by 22 and divide the product by 7. 2. Divide 22 by 7 and multiply the diameter by the quotient. 3. Multiply the diameter by 3.1416. To find the area of an oval. Multiply the long diameter by the short diameter, and their product by .7854. To find the circumference of an oval: Multiply one half of the sum of the two diameters by 3.1416. To find the area of a triangle. Multiply the base by one half of the height. To find the surface of a sphere: Multiply the diameter by the circumference. To find the surface of a cone or pyramid: Multiply the area of the base by one-third of the height. To find the contents of a prism or cylinder. Multiply the area of the base by the height. These simple rules may be memorized by the young mechanic, and, once thoroughly learned, they will form a good basis from which to proceed to other more complicated computations.—*Iron Industry Gazette*.

The possibility of storing electricity was first suggested in 1801 by Gautherot's discovery that two plates of the same metal immersed in acid, after having been subjected to the action of an electric current in one direction, would produce a secondary current in the opposite direction. In 1859 Gaston Plante, while engaged in a series of experiments upon this phenomenon, devised a storage battery consisting of plates of lead immersed in dilute sulphuric acid. This, from a scientific standpoint, was a success, and when properly manipulated would yield a high and steady electro-motive force and currents of any desired strength according to the dimensions of the plates. On account, however, of the large surface required to prepare the plates to receive a charge of any considerable magnitude, the Plante battery was not available for commercial use. Camille A. Faure, after many experiments in the field, made the remarkable discovery that a paste of oxide of lead mechanically applied to the plates brought them instantly into the condition to receive a charge which was only accomplished by Plante after months of electrical treatment. Moreover Faure's discovery materially increased the efficiency and capacity of the battery and reduced its size and weight. Imperfections, chiefly of a mechanical character, existed in Gautherot's battery which have been entirely overcome by the supplementary inventions of Messrs. Swan, Sellon, Volchmar, Shaw, and others.