creditable reduction in operating expenses, even if there was also charged against it any additional labor and the fixed charges on a complete equipment of the special appliances for burning the lower grade fuel. A reduction of over $125 per week, equivalent to $6,500 per year, has been made in actual practice in the case of a boiler plant of 1,000 h.p., by the introduction of mechanical draft and the burning of yard screenings with a slight mixture of Cumberland.

Of the advantages of mechanical draft which are purely qualitative in their character much might be said, but time will not permit. It must suffice to merely refer to the more prominent points of advantage. When the fan is employed for draft production, the steel plate construction, the comparative lightness, the portable character and the absence of heavy foundations, render extremely simple its adaptation to the exact requirements. Being portable it is also salable, and hence an asset of real value as compared with the chimney. It may be used either for forced or induced draft, and placed where it will occupy no valuable space. It may be operated by direct-connected or belted engine or motor, and so proportioned as to produce any desired draft pressure. In operation, the fan is both positive and flexible, independent of the weather but capable of regulation to the finest degree, and of adjustment to the necessities of the fire at any particular moment. A mere increase in the cut-off of the fan engine brings about a result only secured with a chimney at the expense of adding to its height, while a change in the fan speed alters both the volume handled and the intensity of the draft produced.

If this discussion of the influence of mechanical draft on boiler efficiency has rendered clear the factors concerned, it has with equal force shown that this influence is beneficial—in many ways markedly so. In the light of this fact the present active interest in the subject points to the future general substitution of the fan for the chimney.

THE CANADIAN BICYCLE COMBINATION.

A combination has been effected, which includes four of the leading bicycle makers in Canada, the Massey-Harris Bicycle Co., H. A. Lozier & Company, Toronto; the Goold Bicycle Company, Brantford, and the Welland Vale Bicycle Company, St. Catharines. The leading members of the new firm are: Geo. A. Cox, Toronto; Warren Y. Soper, Ottawa; W. E. H. Massey, Toronto; E. R. Thomas, Toronto, and Hon. Lyman M. Jones, Toronto. The probability is that W. E. H. Massey will be president of the company. There will be a general head office in Toronto, but the manufacturing will be done at the places where the present plants of the different firms of the company are located. The company will be a joint stock company, with a capital of six million dollars, so that the concern will have ample capital in its business; it has cost now several millions of dollars to buy these firms out. The name of the new company has not yet been chosen, but at once will make application for incorporation, either by obtaining a provincial charter, or by making special application to the Dominion Parliament for the charter. This year the output of these four firms has been more than 30,000 wheels, and with such excellent plants will not be compelled to have a new one for the manufacture of the automobiles. The firms mentioned are the only ones who were asked to deal in the matter, and it is the intention of the company to employ the same men on each staff as are now in the employ of the several companies. The new company will also build autocars.

LITERARY NOTES

Fox and Mellea, of 49 Taylor street, Springfield, Mass., U.S.A., have put a new nipple holder on the market. Some of the reasons why this "Fox" nipple holder should be used are given on a neat blotter, the title of which is "Ten Reasons," and parties interested in the cutting of pipe nipples, either plain, brass or nickel-plated, should investigate this matter.

The Toronto Brass Manufacturing Co. issue a handsome 20-page catalogue, beautifully printed and illustrated, showing display stands in great variety, papier-mache figures, etc. One of their specialties is the manufacture of brass hand railings for engine rooms, stair rails; one of their latest contracts called for 600 feet of brass railing 2½ inch diameter, for new hall in exhibition grounds, Toronto.

Catalogue No. 3 of the Toronto Electrical Works Co., Ltd., manufacturers of electrical supplies, has reached us. It is unique in its construction; perforated ends in the place of binding allow the insertion of new sheets illustrating new goods added from time to time, and also allow of the dropping out of discarded lines. A glance through shows the different lines to which they give prominence. They manufacture the "American Watchman's Time Detector," which won the only medal for its class awarded at the Chicago World's Fair. The "Toronto Time Register" is a new time check, and is of unique construction, and they claim that it is the only time register which will not allow errors to creep in through mistakes made by the time clerk. A complete line of electrical supplies and tools, pole and line fittings, telegraph instruments, battery motors, lamps, cord tips, electro-magnets, lightning arresters, blow lamps, long and short line telephones, etc., all of which are profusely illustrated and described. Catalogue sent on receipt of enquiry.

The past decade has witnessed a great advance in the art of catalogue making, particularly in the machinery trades. The modern catalogue must not only be attractive, and this seems to have been the sole idea in some recent publications, but it must above all serve in the best manner possible its primary purpose of furnishing information. Illustrations must be clear, explanations explicit, and all information concisely given. The substantial character of most machinery demands similar character in the make-up of the catalogue describing it. Bold, clear type, black ink, good cuts, simplicity in composition, and first-class paper of good weight, all have a subtle influence in impressing the reader with the idea of the high quality of the article described. An excellent example of good catalogue making, in which this is the controlling idea, is presented by the B. F. Sturtevant Co. Their publications are of two classes. First, those which are purely educational in their character, comprising treatises on various special applications of fan blowers, reprints of lectures on similar subjects, leaflets regarding the attendant advantages, etc. Second, the regular trade catalogues of the standard dimensions, 6½ inches by 9 inches, each devoted to a specific line of manufactured goods. Separate catalogues in the same class bear the same cover design, but are printed and bound in different colors with proper titles, so that they may be readily distinguished. All catalogues are designated by individual numbers, the latest being No. 110. The most recent products are immediately presented by bulletins (designated by letters), preliminary to the issuance of complete catalogues regarding the given machines. Loss of time is thereby avoided, and the new designs can be sooner placed before the public.

The Journal of the Western Society of Engineers for June contains some specially interesting papers as "Experiments to Determine the Effects of Freezing on Concrete," by W. A. Rodgers, and the "Preservation of Timber," by S. M. Rowe.

We are in receipt of a copy of the fifth edition of the Slide Rule, a practical manual by Chas. N. Pickworth, Wh. Sc., which is a valuable aid to the use of this necessary instrument

The Indicator Handbook is a practical manual for engineers, by Chas. N. Pickworth, editor of The Mechanical World. This book contains chapters devoted to the construction of the indicator, errors of the indicator, attachment of the indicator, indicator reducing gear, use and care of the indicator.

The new Canadian school songs have been composed for school celebrations by J. M. Harper, Ph.D., for many years rector of the Boys' High School, Quebec. They are "Hail to the Land," dedicated to Sir Wilfrid Laurier, and "Our Flag and Empire," dedicated to G. W. Ross, LL.D. The music is by F. C. Robinson and H. O'Connor Budden.

A feature of the National Export Exposition at Philadelphia will be an exhibit by the International Correspondence Schools, Scranton, Pa., illustrating their method of teaching by mail. The bound volumes of their instruction and question papers, as well as work done by students, including numerous drawing plates, will be shown.