

SESSION



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## Essay on a Visit to the Engineering Exhibition

BY "VERITAS"

CONSIDERING the length of time that has elapsed since the last Engineering Exhibition was held in London, one would have thought that a more representative show could have been gathered together than was the case at Olympia.

The predominant feature of the show was undoubtedly the numerous exhibits of automatic machine tools, that of Charles Churchill showing some fine examples of modern practice, more especially in the 36 in. Bullard Vertical Lathe, which in appearance resembles an ordinary boring mill; but it is claimed that it combines the advantages of the boring mill with those of the ordinary chucking lathe. By the addition of a special attachment, this machine can be made to cut screws from 2 to 14 threads per inch. It has two turrets, which allow of the use of ten different tools, two of which can be used simultaneously.

The Springfield rapid reduction lathe, shown by the same firm, is another worthy example of the most approved practice. This machine is expressly designed for the use of high-speed steel. It is driven by a single pulley, the speeds, numbering twenty, being arranged in the headstock, and giving a uniform cutting speed for diameters from  $1\frac{1}{2}$  in. to 18 in. The Universal milling machine, of the Cincinnati Milling Manufacturing Co., also shown by Churchill, is especially adapted to the automatic cutting of spirals, and should make

itself useful in shops where this class of work is extensively done.

The 18 in. lathe exhibited by Armstrong, Whitworth & Co. seemed to attract a good deal of attention. It is intended to be used with high-speed tool steel, under which condition it is claimed to take a cut  $1\frac{1}{2}$  in. deep, with  $\frac{1}{4}$  in. feed, at 30 ft. per minute. A vertical drilling machine was also shown, having feeds of 35, 50, 80 and 120 cuts per inch when used with high-speed drills.

American machine tools were well represented at the stall of Buck & Hickman, a Universal tool grinder, by Messrs. Brown & Sharpe, being worthy of comment. It is specially adapted to the sharpening of bevel cutters of any angle, plain and formed milling cutters, reamers; in fact, all cylindrical work that will go between centres. A Thread milling machine was also shown, which is said to reduce the cost of production by 50 per cent. over the usual method of executing this class of work.

Messrs. Schuchardt & Schutte exhibited a variety of machine tools, which were of special interest to motor car manufacturers.

The Cam milling machine shown would appeal very strongly to explosion engine makers, on account of the number of cams used in the construction of these engines. It can be used on shafts with solid cams, or for milling loose cams. Manufacturers of gear-driven machinery would appreciate the Automatic tooth-rounding machine, which is designed to do in a neater and cheaper way what is at present done by hand, namely, the rounding off of toothed wheels. A machine constructed specially for the turning of multiple throw crank-shafts was also shown, and turned out some very quick work.

A better example of the use of the electric motor for machine driving cannot be found than in the planing machine. Messrs. Bateman have taken advantage of the above fact with the best results. Their smaller machines are designed for a cutting speed of from 20 to 80 ft. per minute, with a constant return speed of 210 ft. per minute, which reduces the time spent on the return stroke to a minimum. The speed changes are obtained by means of a change-speed gear situated beside the motor, but for my own part I prefer the method adopted by Messrs. Vickers, Sons & Maxim, who use a variable speed motor, and all changes are obtained by a variation of the field excitation of the motor. Another good point in motor

driven planer practice is the ease with which the shock due to reversing can be prevented.

It was very disappointing that so few engines were exhibited, but those that were shown merited careful study. The majority of these were designed for dynamo driving, foremost among them being the three cylinder compound enclosed engine by W. H. Allen, Son & Co. It develops 450 B.H.P. at 400 revolutions per minute, with a steam pressure of 200 lb. per sq. in. The valves are of the piston type, and are designed so as to prevent oil passing up into cylinder, or water into the crank chamber. The lubrication is forced, a valveless pump driven by H.P. eccentric being employed to effect this. A triple crankshaft was also shown, being taken from a 500 H.P. engine, which had been running for seven years for twelve hours per day, and 300 days per year at 300 revolutions per minute. Even after this the wear is very slight, even in the most pronounced places.

An engine of an entirely different type was exhibited by Messrs. Easton & Bessemer, namely, a horizontal tandem compound engine, fitted with drop valves and trip gear, and designed for working with superheated steam. A vertical enclosed type compound engine was also shown by this firm, constructed for dynamo driving, and giving 95 I.H.P. at 550 revolutions per minute. The finish on all the engines shown by this firm appeared to be exceptionally good.

Engineers and others interested in gas engines and producer plants were well catered for, this portion of the exhibition being well represented. Some fine examples of this class of engine were shown by the National Gas Engine Co., most of which were specially designed to run on suction gas. Two petrol engines, for private electric lighting plants, were also shown.

The Crossley Co. exhibited a complete lighting installation, consisting of a suction gas plant driving one of their high speed engines, which was coupled to the dynamo used for lighting their stand.

Another well designed engine was the Kynoch, which was running on suction gas supplied by a plant of same make, at a cost of  $1\frac{1}{2}d.$  for 20 B.H.P. per hour. This plant appeared to occupy very little space for power developed.

Messrs. Keith Blackman & Co. exhibited some very powerful fans for forge blowing, ventilating and refrigerator work.

Some powerful fans were also shown by the Sturtevant Engineering Co., who also show a rotary blower for use when the air pressure required is beyond the capacity of a centrifugal fan. Among the minor exhibits, the Crosby Steam Gauge and Valve Co. is worthy of mention, some very fine examples of indicators being shown. Another stall meriting special attention was Concentric Condensers, Ltd., who claim that their condensers occupy only one-quarter the space, and are only one-third the weight of an ordinary condenser of equal capacity.

Many examples of pneumatic tools were shown in operation by the various firms, and appeared to be convenient to handle and very useful in dealing with work in position.

In conclusion, I think that more exhibitions of this kind should be held, and that manufacturers should lend themselves more readily, so as to establish firmer trade relations between Great Britain and other countries. Also that greater facilities should be given to students of engineering to make use of the exhibitions as a means of improving their knowledge of the profession.

*(Certified to be the sole work of the writer signed "Veritas.")*

