COMPRESSORS.

The date and recorded experience in compressors and compressing is enormous, and does not require our attention, except to note that, for delivering small volumes of air, a staple article of machinery supply on the market to-day is belted-compressors, worked from the shop shafting, having single acting pistons, compound pump chambers, and intermediate air cooler, doing the compressing in two or more stages. They are automatic in action, that is, when the receiving reservoir is above normal pressure the driving belt is moved across from the fast to the loose pulley (both on the crank shaft) by means of a small air cylinder, whose piston rod is coupled direct to the belt shifter. The admission of the compressed air to this small shifting cylinder being controlled by the movement of a diaphragm, whose under side is open to the receiver pressure, and whose lift is controlled by an ordinary safety valve lever, carrying a sliding balance weight, adjustable at will. If the demand be very irregular as to amount, several such belted compressors have been used coupled up in automatic series. Also, pressure from the receiver has been used to throw a friction-clutch in and out of gear and thus secure the intermittent action of a belted compressor.

For compressors generally it may be said that it is advisable, where possible, to use large units, run at fairly moderate speeds; to take the air in as free from dust as possible—the author takes it from under the external eavetrough—also to take in the coldest air possible, as for each 5° lower temperature of the entering air there is said to be a one per cent. increased efficiency in the compressor.

PIPES AND STORAGE.

The shop piping or main for ordinary pressures (80 to 100 lbs.) should not be less shan 1½in. diameter, the larger the better. The author having 4in. pipe spare on hand, used it with great satisfaction, as it gave ample power storage and little friction. Very slight provision is required for drainage. The main is best carried on the top of roof tie beam, and from the first should be liberally supplied with short branches and outlet valves, at least one to every 18 or 20 feet, with screwed ends to fit the union nuts of the flexible hose; the hose for hand tools and hoists varying from $\frac{3}{8}''$ to $\frac{1}{2}''$ diameter. Cords from the outlet valve lever run down to within 7ft. of the floor controlling the position of the valve.

Reservoir storage has to be proportionately the larger the more intermittent the work done,—that is, the greater the extreme call for air compared with the maximum delivery of the compressor. The pipes and reservoir together should be capable of holding the total delivery of the compressor (working at normal speeed) for half an hour, which is far cheaper than providing an excessively large size compressor, cheaper not only in first cost but in daily working. This refers to steam power compressors, which are run to disadvantage at speeds so slow as to make uncertain if the fly-wheel is going to carry the crank well over its dead centre, and also the condensation on the cylender walls, etc., is then excessive.

COMPARATIVE COST.

In ordinary compact factories, with fairly efficient steam plant, the gross cost of the motive power, that is, of fuel, oil and water, is but one per cent. of the total paid out in workmen's wages.

In ironworking, pneumatic power often increases a man's output of work 200 per cent. (threefold). For argument sake allow that it is only doubled. Then, if supplying one man with his proportion of the motive power were by the use of air to increase his proportion of the motive power cost by 50 per cent., it is evident we should then have a similar 50 per cent. margin for profit. As the actual cost is nearer 5 per cent. there is evidently a wide margin for extra outlay in machines or in their repair, which expenditure, per day or per man, is increased in the attempt to use pneumatic power, but in the cost of such tools as