charged through a Sturtevant exhaust head. The boilers are equipped with Sturtevant fuel economizer for heating the feed water. The power-house is placed sufficiently far from the ends of the buildings to permit of ample extension of each, and near enough to the water supply to reduce to a minimum the expense of conveying condensing and other water. Steam, electricity and compressed air are transmitted to the individual buildings through a concrete tunnel and a supplementary system of covered trenches.

One of the noticeable features in the equipment of this plant is to be found in the sanitary arrangements. Most generous provision has been made in the case of the foundry, which has a large locker and wash room. Expanded metal lockers to the number of 225 are already in position. Enamelled iron sinks, six in number, are served with tempered water and are generously patronized by the employees.

heater, is placed close to the division wall, delivers the heated air into a vertical flue and thence to the various rooms. The air for this apparatus is taken directly from out of doors. As a result, there is a peculiar freedom from dust in the pattern storage rooms, which could not be avoided were any of the air drawn back from the pattern shop. The foundry apparatus is located overhead in the end of one of the craneways and arranged to take fresh air from out of doors or return the air from the building and reheat it. This apparatus consists of a ¾ housed steel-plate fan discharging in two directions into galvanized iron pipes. The fan is driven by a direct-connected horizontal engine. The heating apparatus for each building is designed to operate with exhaust steam. The entire heating system in each building is under thermostatic control, by which means an even temperature is maintained throughout all the rooms.

Distribution of air is made through a system of over-

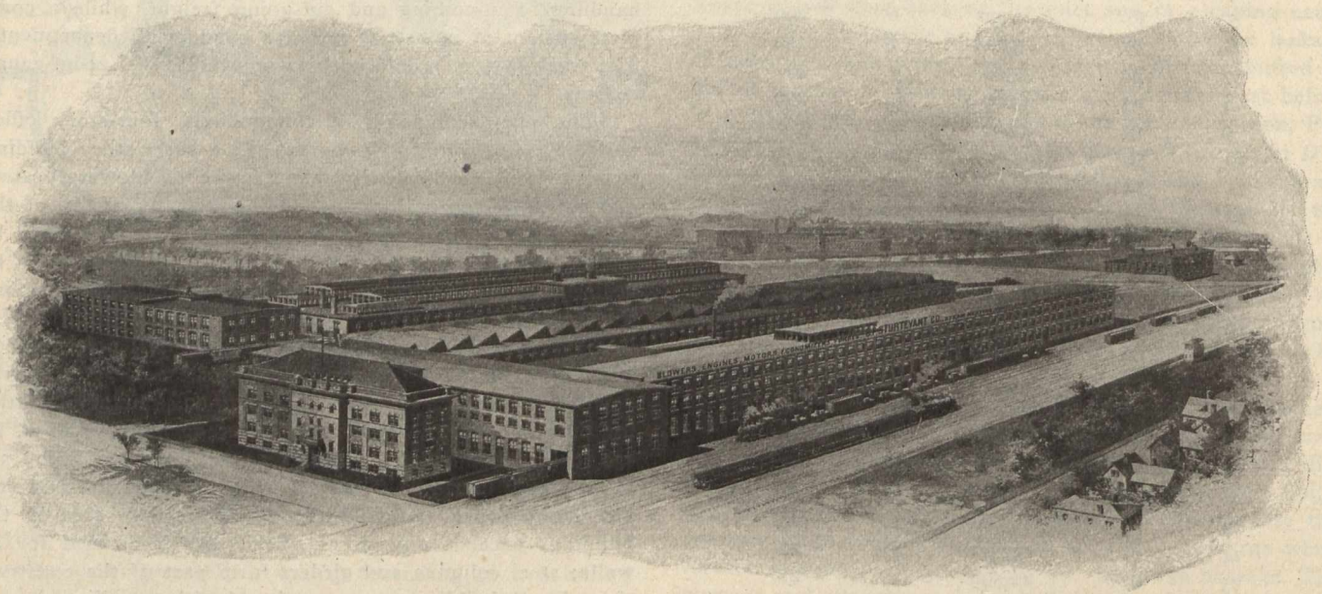

**Fig. 8: Birds-eye View of B. F. Sturtevant Company's Works, Hyde Park, Mass., U.S.A. Machine Shop is the Central Building with Saw-tooth Roof.**

A series of slate partitioned shower baths has proved to be very acceptable during the past summer. The floor of this room is of tar concrete; the upper walls and ceilings which are white and fresh are in pleasing contrast to the steel work and base of the walls which are finished in dark green. Within the same room is installed the time recording system so placed that a double line of men pass the board, one upon either side, as they go and come from the room. The foundry foreman has not been forgotten in the matter of convenience and he with his assistants is provided with an attractive office, well lighted and susceptible of thorough ventilation from out of doors.

Naturally the entire plant is heated and ventilated by the Sturtevant System. In the case of the pattern building the apparatus, consisting of an engine-driven fan and steel pipe head galvanized iron piping, discharging downward to the floor, thereby distributing the air in even volume and economizing in the amount of heat required. The foundry apparatus is of material service upon summer days particularly during the "heat," when it is employed to force cool air into the building.

Incomplete and inadequate though the description of the fine plant where the Sturtevant high-pressure blowers are made is, it will to some extent serve to show, that the B. F. Sturtevant Company, of Hyde Park, Mass., U. S. A., are determined to maintain their international reputation as designers and builders of heating, ventilating, drying and mechanical draft apparatus; fans, blowers and exhausters; steam engines, electric motors and generating sets; fuel economizers; forges, exhaust heads, steam traps, etc.

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# CONCRETE FOR ENGINE FOUNDATIONS

Concrete foundations have been used on large engineering works, such as bridges and dams, for so long a time that observations of time effect have demonstrated that, when properly made, they will resist all destructive influences better than anything else. Engineers are awakening to this fact, and concrete engine foundations are becoming the rule instead of the exception.

There is a number of mixtures which are called concretes, but for engine foundations crushed stone, gravel, sand and cement are the only components which should be used. The stone should be clean, hard and durable, and in size should not be larger than will pass through a three-inch ring, and for very particular work the stone should be smaller, say, such as will pass through a two or two and a half inch mesh. The sand should be sharp, coarse and clean, and the cement should be carefully selected after a study of the conditions.

A first-class concrete can be made of crushed limestone if it is tough, sound and clean, and crushed and screened through a two and a half inch mesh, but the limestone should not contain more than 1 per cent. of dirt or clayey matter, nor more than 5 per cent. of rotten limestone, which you can crush between your fingers. Crushed limestone for concrete should not contain more than 20 per cent. of fine stone, which will pass through a one and a half inch mesh. Clean gravel makes a good substitute for crushed stone