found in almost every case to be much more efficient and economical.

Unlike many operations in the manufacture of textiles, that of drying cannot be attempted in an unscientific manner, if economical results are desired, for it must not be overlooked that the principle of economical drying depends upon the proper use of heat, and this latter, being obtained for the present purpose from coal or other combustible, represents money, every cent of which used for drying purposes must show proper equivalent in output of desiccated goods or material.

In all cases where the drying of textiles is attempted, two very important points must be considered. They are, first, heat, and second, air. Heat is necessary in order to so change the physical condition of the air that its capacity to absorb moisture may be increased, and, besides a constant supply of fresh air is necessary to replace that which has become charged with moisture, for moist air is a poor drying medium. Other considerations for proper drying are also to be taken into account, namely, the distribution of the heated and moving air through and around the material to be dried, and the amount of heat necessary to dry a given amount of material. These will be taken up and discussed further on.

Several systems are in practical use for drying textiles, the most extensive being that based upon the use of rooms (dry rooms) or chambers heated by direct steam radiation, or indirectly by air previously heated by passing over coils of pipes contained in a separate place. This system is largely employed for yarns, and in some mills for piece goods. Its chief advantage is low cost of original installation, but this does not compensate for the labor necessary to charge and empty the room, and the immense waste of heat.

Of course, where there is a great amount of heat going to waste in the form of exhaust steam, etc., as is sometimes met with in a few large plants, then this system is perhaps permissible, but even so the coal pile must eventually suffer.

During the recent years, automatic or continuous dryers for yarns have received marked attention from manufacturers, but not what they deserve, when their great economy is taken into consideration. Whether large or small, these machines are constructed upon sound principles, and although they may differ materially in internal construction, yet they are essentially the same in that the wet material enters at one end, and, after travelling over aprons or belts, etc., always in a constantly changing atmosphere, it emerges in a thoroughly dried condition. Most of these machines are constructed so that the speed can be altered to meet the condition of varying percentages of moisture contained in the different lots of goods.

This system of mechanical drying has so many advantages over the old "dry room" system that it is a wonder that any new mills are equipped otherwise. The operation is continuous and, as a rule, hardly more than a man and a boy are required to attend each machine, and who are quite able to take care of a much larger quantity of material in a given time than would be possible with the old system, which requires considerable space, and much time to hang and take down, to say nothing of the trouble with poles, etc.

Continuous drying of piece goods is gradually coming into favor, although many superintendents still adhere to the closet or room system, drawing the fabrics over poles, arranged parallel over a flat coil of steam pipe supported but one or two inches above the floor. At its best, the system is crude, as much time and heat are lost during the filling and emptying of the compartment.

By means of a suitably constructed chamber, arranged with carrying and guide rollers placed at the top and bottom, and with a separate heater combined with a fan, preferably operated by means of an electric motor, the highest efficiency will be secured. The heater may be constructed of brick or sheet steel, and enclosing a sufficient length of pipe, and designed to utilize either live or exhaust steam. This apparatus can be connected by means of suitable flues or ducts to the drying chamber, through which it forces a steady and uniform current of hot air, and at such a rate that the goods are rendered perfectly dry, and the spent or exhausted air is saturated (or nearly so) with moisture for its degree of temperature.

Many persons consider that air for drying purposes must be hot, that is heated to a temperature sufficient to boil water, and imagine that unless it is, proper drying will not occur. This is wrong, for it is well known that air at various temperatures is capable of absorbing varying quantities of moisture up to what is known as the point of saturation, or "dew point," at which moisture becomes visible. Thus, air at a temperature of 70 degrees F. is capable of absorbing and holding 8 grains of moisture per cubic foot, but if heated to 92 degrees F., it will hold just double that quantity, or 16 grains. If heated to 117 degrees F., it will hold 32 grains, and if the temperature is increased to 146 degrees F., the absorptive power is about 64 grains, consequently it is seen that the higher the temperature the greater the amount of moisture the air will retain. Now, in removing moisture from textiles, it is not so much a matter how high we heat the air to do the drying but rather what volume of air we force through the drying room, for it is actually the heated air in motion that is effective.

To make a practical experiment let us assume a room capable of handling at one time two breadths of 36 in. goods, the room being 8 feet wide, 7 feet high and 10 feet long, equivalent to 560 cubic feet, the total length of cloth averaging 100 yards, and carrying, say, 80 pounds of water with it from the whizzers. Let us now suppose that the blower is in operation, forcing air heated to 120 degrees F., which may contain about 15 grains of moisture per cubic foot. As air at 120 degres F. is capable of holding 34 grains of moisture, and as it already contains 15 grains of moisture, the difference (34—15 = 19) is its unsaturated factor, which divided into 7,000 (the number of grains in 1 pound of water), gives the number of cubic feet (368) necessary to take up the vapor of 1 pound of water; but as we have 80 pounds of water to be absorbed, we must multiply 368 by 80, the product of which is 29,440 cubic feet, which will be the volume of heated air necessary to effectively dry the goods in question.—Textile Excelsior.

THE LOOM OF THE FUTURE.

A recent issue of The Mill and Shop contains the following article: The man who assumes that the constructive principle as embodied in the loom of to-day is good enough to follow up in making further improvements in that most important machine, so indispensable for producing cloths for the whole world, may have to change his mind in the near future, as a new loom, made on an entirely different principle, will soon be put on the market, adapted for making almost every kind of men's wear, woolen, worsted and cotton fabrics, all of which it can easily produce, in marketable condition, and three or four times faster than the best output of the common fancy loom of the present day. Not only can it pro-