

works where cleaning takes place after working hours, an auxiliary exhaust system, with a hood for the bottom doffer, is brought into use.

Grinding which takes several hours, is an automatic process effected by abrasive covered rollers driven by the machine. The small amount of dust produced is chiefly of a metallic character.

In the factory where grinding and cleaning are combined, the doffer exhaust arrangements are first re-connected. Much less dust is evolved and appears to be dealt with more effectively. This firm consider that hand strickling before grinding should not be allowed. Their methods may, however, not be generally applicable. A little strickling may be necessary after grinding to remove small pieces of *débris*.

The trade recognise that present conditions are not satisfactory and experiments are being made with the object of developing improved appliances. In one case a revolving brush is being tried, with independent exhaust draught applied by flexible connections; it is said to give promise of success. The brush is narrower than the hand strickle and less dust is evolved at a particular moment. In another case, a vacuum fitting is under consideration. Previous use of vacuum stripping was given up because of rapid erosion of the metal pipe bends and other parts. Unless effective dust suppression is realised for stripping, all workers, other than strippers, should be excluded while it is in progress and for some time afterwards, and the room well ventilated.

The machine for cleaning and grinding the smaller rollers, which gives rise to much dust, should be fitted with efficient exhaust arrangements—a straight-forward matter—and as completely enclosed as practicable to collect the heavier *débris*, precautions which are not always taken. The machine is either installed in the carding room, or in a room adjoining. Independent machines should be provided to deal with rollers of different lengths, otherwise inconvenient adjustments, liable to be neglected, have to be made.

*Card Side Waste Treatment.*—The irregular “selvedge” of carded fibre, separated at the two sides of the finishing card, being unsuitable for sliver yarn, is removed by suction draught to a “side-end” machine, which prepares it for further use. The material is blown upon perforated cylinders, the air escaping at the side and the material being discharged on the floor. The process produces dust, particularly when the feeding is irregular, the air then having a free path between the cylinders. The material should be delivered under suction and not under pressure, a “pressure” machine being unsuitable.

*Spinning and Doubling.*—Yarn is spun at flyer or ring frames which may carry up to 80 spindles, 40 on each side. Much piecing is required owing to the comparative weakness of the fibre. A fine metal thread is spun with asbestos, for brake linings and certain other purposes. Mule spinning is not practised in this country. A large amount of doubling is carried on.

Spinning, more particularly ring spinning, gives rise to dust, continuously produced by the “ballooning” out of the fibre owing to the rapid rotation of the spindles, which may run at speeds of 1,700 revolutions per minute, and intermittently, when the yarn breaks. Doubling is less dusty than spinning. While the amount bears no comparison with that produced in carding, and is less than that from dry weaving, the workers are continuously exposed to some dust, more in some factories than in others, doubtless due to differences in working methods or materials. Exhaust draught for its removal has not been applied hitherto, but experiments in one factory have been so far successful that the firm are prepared to equip all spinning and doubling frames with exhaust ventilation plant, embodying (i) exhaust ducts parallel with the frames, above the tin rollers, with shaped hoods at intervals, each to deal with a small group of spindles, and (ii) for more effective concentration of the draught, panelling for the ends and lower parts of the frames beneath the spindles, capable of being easily removed when necessary. Such safeguards may require somewhat wide application unless special general ventilation is provided.

*Warping.*—Warp beams are prepared in the usual way from creeling frames, a small evolution of dust occurring at the frames and beaming machines; localised exhaust ventilation could hardly be applied effectively. A partitioned-off space, mechanically ventilated crosswise, with extraction at low level would effect improvement.