SOME HYGIENIC PROBLEMS WHICH WILL FOLLOW ON THE ADOPTION OF MECHANIZATION IN INDIA.

By Lieutenant-Colonel R. A. ANDERSON, M.B., F.R.F.P.S.
Royal Army Medical Corps.

Mechanization, which is now rapidly proceeding in India, will inevitably bring in its train certain medical problems chiefly of a hygienic nature. These are given very briefly in the following notes, with suggestions for solution.

The subject, which is a large one, may be considered under two heads: (A) Problems the immediate result of mechanization, and (B) Problems the more remote result of mechanization.

(A) This heading includes:

1. Prevention of Diseases likely to accrue in Mechanical Workshops, Garages, etc.—This problem is being adequately dealt with in the construction of the new garages, workshops, etc. These have been and are being built, large, spacious, airy and well ventilated, with exhaust fans and protection of the men working in them, in the hot weather, against the effects of heat. Consequently, it is not considered that much trouble will be experienced from inhalation of injurious exhaust gases or effects of heat owing to the precautionary measures already taken in this construction.

2. Vehicle Washing.—Washing of the very large number of vehicles will produce a large volume of water waste to be disposed of. Whether soakage pits will suffice to dispose of this volume remains to be seen. Otherwise disposal will have to be by drainage or gardens; this will require careful supervision to prevent collections of water becoming breeding places for mosquitoes.

3. Diseases Due to Movement of Mechanized Forces.—This aspect of the subject presents difficulties which at the moment seem almost insurmountable. To begin with, it must be considered that the roads in India, in their present condition, are entirely unsuitable for the rapid movement of mechanized forces. The reason is that the roads in India are not like those at home or in Europe. Only sections of the main roads, such as the Grand Trunk Road or the Great North Road, are tarmacked. Consequently, the vast majority of roads in India can only be described as filthy with dust. Those who are experienced motorists in India will, it is thought, back up this statement. Furthermore, outside the large cities and towns, there is no traffic organization on the roads in India. Where tarmac does exist it is only a narrow strip in the centre of the road, insufficient for two vehicles to pass. This strip, or, where it does not exist, the centre of the road, is invariably occupied by slow-moving bullock carts, camel carts, buffalo carts and herds of cattle, etc. To these occupants of the highway...
there is no such thing as a "rule of the road" whatever. Whether coming or going, there is a complete absence of "correct side" of the road. They are all over it, left, centre and right. They will not move out of the way. No lights are carried at night. Consequently the mass of dust, thicker than the blackest fog, if not seen can hardly be imagined.

This dust will cause not only a grave loss of man-power, but of vehicles, in mechanized forces unless some means of preventing it is found.

The casualties and diseases to account for this loss of man-power are:

(a) Death or serious injuries from crashes. This statement is not an exaggeration when it is considered that it is impossible for any driver to see much when a mechanized force is on the move, unless his sight can be confined to the tarmac strip where such exists. This will necessitate legislation to keep bullock carts, etc., off the centre of the road and that may be difficult to enforce.

(b) Severe conjunctivitis and trachoma, etc., the result of the irritation caused by this dust.

(c) Acute inflammation of the air-passages, the result of the continual inhalation of dust.

(d) Certain bowel diseases such as the dysenteries, diarrhoea, etc., from ingestion of the causal organisms with dust.

With regard to prevention many methods are open to us. Firstly, tarmac the whole width of the roads which would prove very costly and take a considerable time to complete. Secondly, proper legislation to keep slow-moving traffic off the centre of the road. This, so late in the day, is almost impossible to achieve now and might still not control the dust raised by this slow traffic. Thirdly, where mechanized forces have to pass each other, one of them will have to remain stationary to allow the other to pass. Fourthly, there is consideration of the distances between vehicles. This measure will not prove of great use because there is little wind and, consequently, the dust hangs in the atmosphere. So much is this so that spacing even up to 100 yards interval will fail to give sufficient visibility to drivers, where tarmac does not exist. Fifthly, protection of the men from dust nuisance. The gas mask would appear to be ideal for this, but it still remains to be proved whether it could be borne for a very long period during a journey in the hot weather in India. Sixthly, protection of the eyes by goggles—perhaps the goggles used for protection against mustard liquid would prove the most suitable for this purpose without adding to the man’s equipment. Seventhly, some form of filter pad over the mouth and nose capable of absorbing the dust from the atmosphere inhaled. Eighthly, although it is not proposed here to consider diseases due to the accumulation of exhaust gases in closed armoured vehicles, such as tanks, armoured cars, etc., which have been carefully studied at home and as far as possible eliminated, still, in India during the hot weather, the prevention of effects of heat inside these vehicles will have to be carefully considered. This may necessitate the installation of fans to provide better ventilation and air movement and, possibly, inside lining with some form of material which is a non-conductor of heat.
(B) The introduction of mechanization means the gradual disappearance of the horse and mule and consequently their litter. This means a very large hygienic problem of conservancy in India, viz. the disposal of nightsoil. With the exception of the ports and very large cities, the disposal of nightsoil all over India is by incineration, which depends on litter for its normal working. This method of disposal is primitive and has existed throughout the ages in India and, though it may be considered as a temporary measure for camps, one will not be sorry to see the end of it in modern times. The great drawback of this method is that it is associated with open latrines and handling by sweeper personnel, who can be counted upon to follow the line of least resistance where possible. The problem of disposal of nightsoil will soon become acute. There are many alternative methods:

(1) Naturally the most satisfactory method of disposal is by a modern water carriage system of disposal. But in a vast country like India, it is obvious that the enormous cost to be borne by carrying out this method will not be possible in the near future. This up-to-date method can only be carried out gradually in the next century.

(2) Septic Tanks.—The next satisfactory method of disposal. This method will be costly though much less so than number (1). But there will eventually be a saving in the huge sweeper establishment, crowley carts, etc., and it will do away with the most objectionable open latrines.

(3) Deep Bored Hole Latrines.—Another very satisfactory method, apparently that of choice, provided it proves to be possible in many parts generally, but this depends on the level of subsoil water. As compared to (1) and (2) this method is cheap to install and will eventually prove much more economical than any other method in that all the paraphernalia of conservancy establishments, sweepers, crowley carts, incinerators, etc., will be saved. It has the further advantage that it does away with open latrines.

(4) The Indore Method.—This method would afford a source of revenue in sale of a valuable manurial soil. The method, to be successful, must be worked by trained establishments and it has the great disadvantage that it does not do away with open latrines.

(5) Entrenching.—Here again we shall be left with open latrines and an added source of fly-breeding, which is almost impossible to control unless stringent supervision is carried out with adequate preventive measures.

Now that incineration must disappear, it can only be hoped that, for the sake of prevention of bowel diseases, which are the scourge of India, one of the first three methods will be adopted.

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