

ACCIDENTS AND PREVENTION

- 809 The Application of Biomechanics to Safety Engineering. D. M. Ross and T. F. Hatch. Natl. Safety News 75, (JASSE Section) 25-28 (May 1957).

Two factors that affect human safety are unsafe acts and excessive stress. The added risks due to stress cannot be completely offset through attempts to improve human behavior. Rather, minimizing the accident risk in such stressful man-machine situations involves a revision in the design of the work situation based upon a fundamental understanding of biomechanics; that is, of man's capabilities and limitation to deal with external stresses. A systematic description of man's biochemical characteristics is needed, but there has been little experimentation on the subject. Two recent investigations on the subject are reviewed. One such investigation conducted in the authors' laboratories has been reported (HF Abst. 580, May 1957). The second was recently completed by Dr. W. T. Dempster at the University of Michigan. It deals with the mechanical forces which are operative when the body exerts a pushing or pulling force with the hands. The results are reviewed briefly. These studies are fundamental in nature but have clear implications for safety engineers. (1) They illustrate how the need can be met for the systematic analysis of man-machine relationships which will provide a basis for establishing safety design criteria. Such analysis must precede the actual design of machinery. (2) Given such systematic description of biomechanical characteristics, a sound basis is provided for the accumulation of data on large population groups. (3) By relating force output to body and task position, these studies in themselves suggest design and layout criteria for safe operation. Present day safety statistics give no clue to the relation of biomechanics to accident hazards. Suggestions are given for further study of the problem.

- 809 Planning for Safety. R. W. Mallick. Safety Maintenance 113, 15-18, 42, 43 (May 1957).

In planning or redesigning a plant, many elements must be considered from the standpoint of safety. The most important ones are: (1) the plant site; (2) entrances and exits; (3) aisles, stairs, elevators, floors, ramps, and obstructions; (4) arranging and guarding of equipment; (5) painting and lighting; (6) prevention of fire and explosion; (7) first aid facilities; (8) flow of material and housekeeping; and (9) handling and storage of materials. The discussion of each of these factors includes a number of helpful suggestions.

- 810 Accident Control through Motivation. H. K. Lambie. Natl. Safety News 75 (JASSE Section) 29-32 (May 1957).

A definition of motivation is suggested: "to get someone to want to want to". Hindrances to the success of motivation for safety include physical inability, lack of knowledge, and misunderstanding of instructions. Motivation is effective when objectives of the safety program are clear, definite, within the capabilities of the employees, simple, short range, and challenging to the individuals concerned. The factors motivating people are: (1) desire for acceptance, (2) desire for recognition, (3) desire for a challenge, and (4) desire for security and comfort. Safety promotional plans, such as safety awards, contests, housekeeping programs, safety suggestion systems, and safety committees, must be planned so that every employee feels that he has an active part in it and stands to gain personally from its success. Principles are outlined for the conductance of safety programs. When these programs provide satisfaction of the employees' basic human desires, each employee will want to want to control accidents.

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