

Looking Ahead— Research in Safety

Fields in Which Safety Research Is Needed

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A large amount of effort is being expended in the continual battle to reduce the number and severity of injuries which result from accidents. Progress is being made, but it is slow; and sometimes it seems that the rate of new hazard creation is exceeding our ability to adequately protect the persons and equipment involved.

The term *Research* implies a systematic investigation of some phenomenon or series of phenomena by the experimental method. The term *Safety Research* might be interpreted to mean a systematic investigation of *Safety* by the experimental method. I wonder if we, in our professional capacity, have really approached this over-all "problem of preventing accidents and injuries by utilizing this basic approach? Many commendable safety records have been set by various industries. According to *Accident Facts—1953*,¹ the best no-injury record in industry is 28 million man-hours. Eight industries have established records of working 10 million man-hours or more without lost-time injuries, and another twelve industries have each worked in excess of five million man-hours continuously without such injuries. Each year new records are being recorded by the different industry groups, and Westinghouse is proud to have established the most recent record for the electrical industry at its Sunbury plant, and the printing industry at its Trafford plant. Many of us have unquestionably asked how any group of people could exist without some kind of injury during these long periods of time.

Have competent studies been made to evaluate the why of these extended periods of work without injury to a person? Is there some common denominator in these fine records which would be of value to all industries? Were these situations created by some "super safety engineer"; by some exacting

employment procedure which weeded out the accident producing individuals; by a management directive that people must work safely; or merely by some chance statistical distribution with a probability of almost zero? It appears that research into the reasons for such industry records might well reveal a pattern of accident prevention effort which would be of extreme significance. Such research would have to be conducted by an independent and unbiased group of persons. Their competence should be unquestioned, and they should have adequate facilities at their disposal for whatever type of study or analysis might suggest itself.

A broad investigation of this nature might be thought of as *Fundamental Research* such as that which produced the discovery of the neutron by Chadwick, or any of the many fundamental discoveries such as Ohm's Law or the theory of relativity.

This need for *Fundamental Research* certainly exists; but, in the meantime, there are still many areas where practical and developmental types of research can be pursued to the benefit of accident prevention efforts. Practically all injuries to persons result from an interplay of both personal factors and mechanical or physical factors; or, in common terminology, unsafe acts and unsafe conditions. In a study made by the National Safety Council of 4818² cases which resulted in permanent impairment or death, 81 per cent involved an unsafe condition while 87 per cent involved an unsafe act. In other studies these percentages vary considerably, depending upon the completeness of the reports; and one cannot minimize the interpretation placed upon such data by the reporters and the investigators. It is certainly significant, however, that a large majority of serious injuries involve both an unsafe act and an unsafe condition.