

tions of linear programming developed over the last few years. These applications include not only the getting up of schedules for the use of an organization's resources, but also theoretical studies to aid policy-makers in determining how activities and resources might be changed to improve the organization's position. The principal limitation of linear programming is the requirement for linearity which excludes many important allocation problems. As I indicated earlier, this requirement was put on to facilitate problem solution, and a number of fairly general methods for solving such problems has been developed.

Some solutions have also been obtained for problems where constraints and/or the objective function are quadratic rather than linear. That is to say, they involve second powers of the variables. A promising development which is still in the beginning stages is dynamic programming. Essentially, this involves the solution of a sequence of allocation problems where the conditions on any problem in the sequence are effected by the solution of all preceding problems in the sequence. The principal difficulty that one must face here is the fact that optimum solution to individual problems won't necessarily optimize the objective function for the sequence taken as a whole.

Let's consider, now, a different type of situation from the ones that I've just discussed. Suppose we have a system that involves one or more input values, and an output value X . Also suppose we observe that for the same choice of input values a different value of X comes out each time the system is operated. This situation can arise if the situation contains chance or Stochastic (phonetic) elements; and we must consider X to be a random variable. Either by experiments or by analysis we try to find out as much information as possible about the frequency distribution of X . That is, the relative frequency with which different values of X could be expected to occur. From this distribution we may wish to estimate the probability