starting the computations, each of the vectors λ_r may be chosen arbitrarily.) In the next stage of the iterations, the λ_x just solved for becomes one of the λ_r's, and another vector becomes the λ_x to be solved for. In the small problems which have been worked thus far, with m no greater than 4, convergence has been reasonably rapid, depending in large measure on the apparent "cleanness" of the factorial structure.

As an illustration of results obtained, Table 1 compares the biquartimin solution with that obtained by Thurstone (*1*, p. 229) by graphical methods for his "box problem." Corresponding transformation vectors from the two solutions are about 3° apart.

The principle utilized by the quartimin criterion could be applied easily to the special case where one requires orthogonality. This has not yet been done; at any rate, it would seem that the criterion of simple structure should alone determine to what extent any given set of data approaches orthogonality. Like other oblique solutions, the biquartimin criterion allows complete freedom in this respect.

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10. I thank Albert E. Beaton, Jr., and Frederic D. Weinfeld for their help in programming the computations for a high-speed computing machine (IBM Type 650). I am also indebted to the John Hancock Mutual Life Insurance Company and to the Statistical Computation Laboratory of Boston University for making computing facilities available. A complete report is in preparation.

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Chemoprophylaxis with Diazouracil of Poliomyelitis in Mice

One approach to the chemotherapy of virus diseases has been the use of various antimetabolites to interfere with nucleic acid metabolism (*1*). Since the publication of the reports on the action of benzimidazole against poliomyelitis in mice (*2*), investigation of compounds of this nature has been pursued in this laboratory (*3*) as a possible method for chemoprophylaxis. One of the substances tested was diazouracil, which had been found to have some activity against certain viruses (*4*). This report presents evidence about the effectiveness of diazouracil in the prevention of paralytic poliomyelitis in mice.

Table 1. Chemoprophylaxis of poliomyelitis with diazouracil in mice. Mice were inoculated intraperitoneally with an estimated 10 ID_{50} of MEF_1 poliomyelitis virus. Diazouracil treatments (10 mg/kg day, intraperitoneally) were given for 4 days, beginning one day before virus inoculation.

Treated No. surviving/ No. inoculated	Control No. surviving/ No. inoculated	Survival index
	Sample No. 1	
11/19	3/20	5.0
6/20	2/20	2.0
8/20	2/19	1.7
7/19	1/20	1.6
	Sample No. 2	
6/20	0/20	1.7
8/19	5/20	1.9
	Total	
46/117 (39%)	13/119 (11%)	

In these studies, mice of the Webster strain weighing less than 12 g were inoculated intraperitoneally with 0.2 ml of a 10 percent suckling-mouse brain suspension of the MEF_1 strain of type II poliomyelitis virus, approximately 10 ID_{50}. Mice were treated intraperitoneally with diazouracil (*5*) at the rate of 10 mg/kg day for 4 days beginning the day before virus inoculation; however, on the day of virus administration, treatment was given subcutaneously. Control animals were treated similarly with equal volumes of buffered saline. Mice were examined daily for paralysis throughout an observation period of 21 days.

Data from several experiments with diazouracil are presented in Table 1. The results are expressed as the ratio of the number of animals surviving on the 21st day to the number of animals inoculated. A survival index was calculated from the ratio of the harmonic mean of the survival time of the treated group to that of the control group, with a favorable response in terms of prevention or delay indicated by ratios greater than 1 (*6*). In all experiments, diazouracil reduced the incidence or delayed the onset of paralysis in mice inoculated with poliomyelitis virus. Thus, in the first experiment, treatment with diazouracil reduced the incidence of poliomyelitis from 85 percent (three survivors of 20 mice inoculated) to 42 percent (11 of 19 surviving), with harmonic mean survival times of 4.0 and 20.2 days, respectively. When the results of these tests were combined, it was found that only 13 of 119 control animals survived, compared with 46 of 117 treated animals—a difference significant at the 1 percent level (*7*). When treatment with diazouracil was begun on the day of virus inoculation or thereafter, it was less effective. No protection was observed when intraperitoneal treatment with diazouracil was started the second day after virus infection or when diazouracil was given orally at the rate of 100 mg/kg day for 4 days beginning the day before virus inoculation.

In contrast to its action in mice, diazouracil did not protect monkeys. When infected orally with the Mahoney strain of poliomyelitis virus, 6 of 6 monkeys in each of two control groups developed paralysis, as did a group which was treated intraperitoneally with four daily doses of 5 mg of diazouracil per kilogram each, beginning the day before virus inoculation, while in a group treated intravenously with five daily doses of 2.5 mg/kg, the morbidity was 5 of 6.

Although the effectiveness of diazouracil is compatible with the assumption that analogs can be used to interfere with the nucleic acid metabolism involved in virus replication, it remains to be demonstrated that this is the mechanism of the chemoprophylactic action of the compound against poliomyelitis in mice.

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New Low Chromosome Number for Plants

Previously, the lowest chromosome number reported for plants was $X = 3$. This number occurs in *Crepis, Crocus,* and *Ornithogalum* (*1*). In the process of a biosystematic study of the *Blepharodon* section of *Haplopappus* several species have been found to have low chromosome numbers. Of particular interest, however, is *Haplopappus gracilis* (Nutt.) Gray. This is a small annual composite that ranges from southern