

CORRESPONDENCE

"Blueprint for Survival"

SIR.—In commenting on the *Blueprint for Survival*, you made heavy calls on your resources of invective, but few or none of your stocks of factual information. No reasonable person can deny that in the past few years there has been developed in the mass media a formula which might be called "the complacency of hysteria"—somebody prophesies imminent doom, and sets down his pen feeling he has done his good deed for the day. I suggest that, to the scientific public, a greater danger of misjudgment arises from what one might call a "hysteria of complacency". Is it good enough to dismiss, say, the population problem by the argument that it is not very pressing in Britain—so long as protein foodstuffs for man and beast are available at reasonable prices on the world market, which may well not be so for very long? Can one dismiss pollution, or exhaustion of easily won raw materials, because one could surmount these impediments by paying enough—if the economic system allowed?

I am far from urging that every statement of a Nobel Prize winner on any subject is necessarily the quintessence of wisdom, but when you accept for review a fat volume of a symposium on "The Place of Values in a World of Facts", organized by the Nobel Foundation two years ago, and attended by at least half a dozen winners of the Prize, should you not be tempted to think there could be something in the words of Tiselius in his opening speech: "[there is] a growing awareness among people of all nations that something is wrong with the world and that there is an urgent need to come together to see what should be done". Can we really leave the planet to a few technological fixes and the forces of the market? The *Blueprint for Survival* is, in my opinion, a carefully thought out treatment of the subject, not afraid to follow its arguments when they lead to far-reaching conclusions; but, of course, not always completely acceptable, either in detail or in time scale.

Yours faithfully,

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Arts and Sciences

SIR.—The precise causes of the recent decline^{1,2} in the popularity of the sciences among school pupils who have just taken O level have been difficult to locate. At Marlborough the trend has just recently been reversed, but the results of a three year study into the factors affecting pupils' choices of A level courses have produced one or two unexpected and interesting features.

A questionnaire given to the 180 pupils who had just taken O level in the summer of 1966 established that the main influence affecting choice of A level course was interest in the subject³. There was little difference between the responses of the pupils who had (by then) chosen to follow arts courses, those of the pupils who had chosen to follow science courses, and those who had chosen to follow mixed arts-science courses, and the results tallied closely with those of other investigators⁴⁻⁶, some working as long ago as 1935⁷.

A number of observers^{8,9} have suggested that the poor quality of the science teachers, or of the facilities and of the classrooms given to the science teaching, in schools has been responsible for the lack of interest shown in the courses offered. At Marlborough such facilities and teaching staff have remained fairly consistent during the period in question, and such a correlation seems altogether unlikely. Indeed, the 1966 questionnaire established quite

clearly the relative unimportance of "quality of teaching" in choosing an A level programme. We decided, therefore, to look more deeply into the feelings about arts subjects and science subjects and, in order to do so, selected English as the most popular arts subject and physics as the most unpopular science subject. The procedure chosen for the investigation involved Osgood's semantic differential technique, and in this respect the work follows up some previous studies^{11,12}.

The O level pupils of the 1968 and 1969 population were asked to rate each of the twelve nouns listed in Table 1 on each of eleven pairs of adjectival opposites¹¹⁻¹³. Factor analysis of the responses gave very similar results to those reported by previous investigators^{10,14}. The use of the adjective pairs wise-foolish, sober-drunk, good-bad, successful-unsuccessful, correlated highly with each other, and the cluster was therefore used to derive an assessment of "evaluative goodness". Similarly, the adjective pairs hard-soft, masculine-feminine and active-passive formed a "potency" cluster, and hot-cold, active-passive, savoury-tasteless formed an "oriented activity" cluster. No other clusters were found to be statistically significant.

The adjective clusters were then used to derive three factor scores for each of the original twelve nouns, and the mean factor scores, multiplied by 100, are shown in Table 1.

Table 1 Mean Factor Scores ($\times 100$)

	Evaluative goodness (wise positive)		Potency (masculine positive)		Oriented activity (hot positive)			
	A	S	A	S	A	S		
Father	77	92	Games	69	71	Pleasure	89	92
Good schoolmaster	55	80	Work	36	20	Good schoolmaster	32	43
Home	39	41	Boy	29	46	Home	25	20
Success	29	47	Men *	26	43	Men	19	36
English *	11	-22	Success	24	14	Success	15	22
Pleasure	-07	05	Physics	22	13	Games	15	12
Work	-12	-16	Father	15	17	Father	14	19
Boy	-43	-32	Rules	13	-01	Boy	09	16
Games	-46	-31	Good schoolmaster	07	09	English †	-08	-46
Rules	-57	-64	English	-51	-62	Work	-51	-51
Men †	-60	-31	Home	-94	-79	Physics †	-100	-37
Physics †	-67	03	Pleasure	-103	-84	Rules	-110	-84

Significant differences between the A mean and the S mean are denoted by * (5%) and † (1%).

The columns headed by A show the scores returned by those pupils who had elected to follow a predominantly arts based course to A level, and those headed with an S show the scores returned by those pupils who had elected to follow a predominantly science based course to A level. The original intercorrelations between the adjectives were virtually the same for the A group as they were for the S group, and the factor scores were obtained using the pooled A and S intercorrelation.