smaller beans. But the cold summer of 1972 must be considered; possibly the sowing period could be commenced from early May in an average year.

The beans grown at Wye in 1972 were canned in tomato sauce by a processing firm who report that the texture and canning quality of the beans compared favourably with those imported.

The future of the Navy bean as a break crop will ultimately be determined by its financial returns per hectare. Current variable costs (seed, fertilizer and sprays) are £66 per hectare and returns for an average crop yielding 2 ton ha^{-1} are £100–£120 per ton. This would result in a gross margin of £134–£174 per hectare. The programme of research will be expanded in 1973.

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Octal Notation for Designating Physiologic Races of Plant Pathogens

HABGOOD[1] proposed a system for naming physiologic races of plant pathogens making use of the characteristics of binary notation, in which the reaction of each host to a given isolate is written down using 0 for resistance and 1 for susceptibility, the differential hosts being arranged in a fixed linear order. The resulting pattern of 0s and 1s is then considered as a binary number and converted to decimal notation. This system has been adopted for physiologic races of *Puccinia striiformis* infecting wheat[2].

Experience of using this system has revealed two disadvantages: (*a*) it is often difficult to appreciate the correspondence between the decimal race codes and the patterns of susceptibility on the differential hosts unless one is highly accustomed to converting decimal values to binary notation; (*b*) it is difficult to recognize similarities and differences among the patterns of the decimally coded races.

Against these it may be argued that those who have to work continually with this binary/decimal system will soon become familiar with the susceptibility patterns on the standard differential hosts corresponding to the decimal race codes, while others who require them less frequently can work the patterns out by the method of repeated subtraction of the decimal values of successively smaller powers of 2, as described by Johnson *et al.*[2]. It may also be argued that the patterns are, of themselves, without significance—they merely indicate different physiologic races. This would not, however, be true if this system of nomenclature were used to designate virulence genotypes as suggested by Habgood[1].

From my experience of octal notation, that is, counting with a radix of 8 instead of 10 (decimal) or 2 (binary), I suggest that octal notation would avoid both these disadvantages. The octal system is widely used in listing machine instruction programs for small computers, where groups of six octal digits are written in place of sixteen to eighteen binary digits. The correspondence between binary, octal and decimal notations is shown in Table 1. This correspondence will be the more readily appreciated if the binary patterns are resolved into groups of 3 binary digits, starting at the least significant, that is, right, end.

Although individual octal race codes would usually be bigger than in decimal notation, the octal system would use no more digits overall. Both notations can accommodate 9 differential hosts within a 3 digit code, that is, 777 octal or 511 decimal. As in the binary/decimal system, the binary/octal notation is open-ended, permitting the easy addition of further differentials as they become necessary.

Table 1 Corresponding Values in Binary, Octal and Decimal Notations

Binary	Octal	Decimal
0	0	0
1	1	1
10	2	2
11	3	3
100	4	4
101	5	5
110	6	6
111	7	7
1 000	10	8
10 000	20	16
100 000	40	32
1 000 000	100	64
10 000 000	200	128
100 000 000	400	256

From Table 2 it can be seen that some decimal race codes are easily decoded into the corresponding binary patterns of differential host susceptibilities (for example, 36 decimal) and that the relationships among the patterns for some groups of races are quickly clear, such as 36 and 39 decimal. I would suggest, however, that after comparatively little experience users of the binary/octal system will more rapidly appreciate that race 150 octal differs from race 51 octal in not giving a susceptible reaction on differential A, is identical in respect of differentials B and C, and D, E and F, and gives an additional susceptible reaction on differential G, while this is not at all clear from the corresponding decimal codes, 104 and 41 respectively.

Table 2 Examples of Race Codes on the Proposed World Series of Differential Varieties for *Puccinia striiformis* in Binary, Octal and Decimal Notations.

Differential variety							Octal code	Decimal code
G	F	E	D	C	B	A		
	1	0	0	1	0	0	44	36
	1	0	0	1	1	1	47	39
	1	0	1	0	0	1	51	41
1	1	0	1	0	0	0	150	104

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Received February 19, 1973.

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