has cnung the flowering time. Shorter or longer photoperiod tended to delay the flowering. These experiments clearly show that groundnut varieties are photosensitive; hence earlier suggestions that the plant could be classed as day neutral[2–4] is not substantiated. It is interesting to note that photoperiods shorter or longer than 10 hrs delayed the flowering in most of the groundnut varieties used in this experiment.

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SPONTANEOUS CEREBRAL NOSEMIASIS IN A LABORATORY MOUSE

Encephalitozoon cuniculi, the cause of spontaneous paralysis in rabbits, has been found to affect a large number of laboratory and domesticated animals (rat, mouse, rabbit, guinea pig, hamaster, ferret, cat, dog, ox and goat), avian species (pigeon, parrot and sparrow) and man (Perrin[1], Lainson *et al.*[2], Jirovec[3], Petri[4], and Pattison *et al.*[5]). The organism was renamed as *Nosema cuniculi* by Lainson *et al.*,[2] 1964. Ray and Raghavachari[6] and Khanna and Iyer[7] described this parasite from the kidneys of rabbit and goat respectively from this country. The purpose of this note is to place on record the occurrence of *Nosema cuniculi*, in the brain of a white mouse for the first time from this country.

On histopathological examination of formalin fixed tissues collected from a mouse which had died of botrycmycosis affecting various interval organs, the cerebral white matter showed focal scattered areas of necrosis, infiltrated by glial cells with hyperaemic changes in the neighbouring vascular channels. Gram stained sections revealed small, rounded pseudocysts containing numerous small Gram-positive cigar–shaped parasites with rounded ends approximately $0{\cdot}1–1 \times 1{\cdot}5–2{\cdot}5\,\mu$ in size (Fig. 1). The parasites had a clearly defined nucleus with a dark staining central band and rounded pale area at the poles. They stained weakly with Giemsa but intensely by Goodpasture-Perrin technique. On the basis of morphology and staining affinity, the parasite was identified as *Nosema cuniculi* which was also confirmed by Dr. P. C. C. Garnham, F.R.S., London School of Tropical Hygiene and Medicine, U.K., during his recent visit to this Institute.

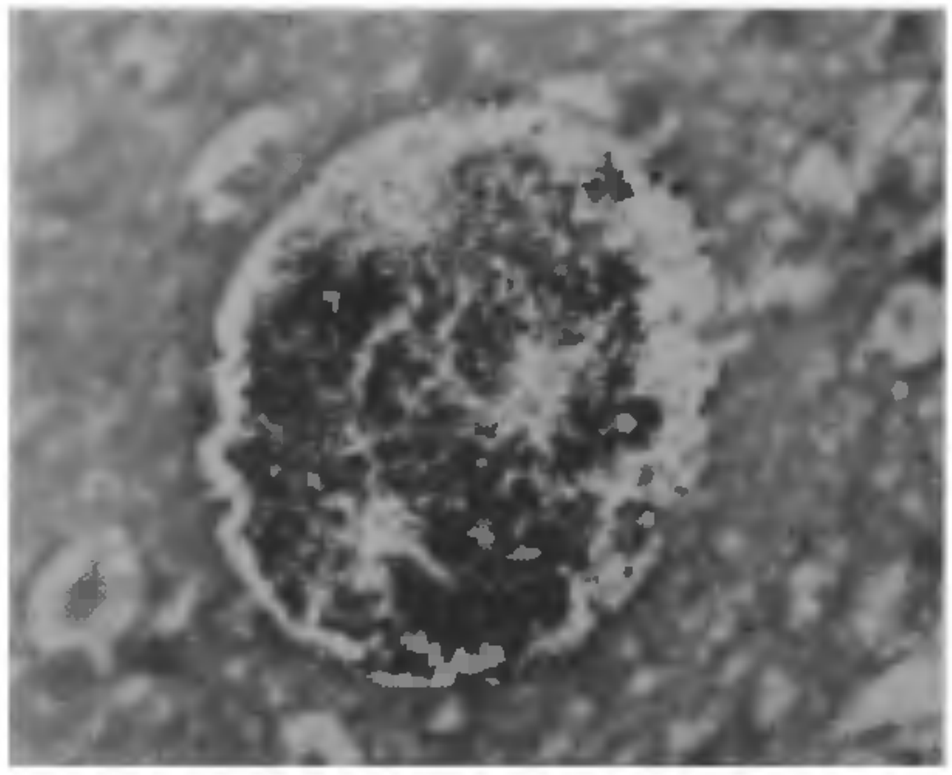

FIG. 1. Brain showing parasitic-cyst of *Nosema cuniculi*. Gram, × 1,000.

The parasites Nosema and Toxoplasma are very similar and differentiation between them is based on immunological and morphological characteristics (Soulsby[8]). Morphologically Toxoplasma is larger in size, crescent–shaped and is Gram-negative. Cytoplasm is granulated with Giemsa stain and the organism stains well with haematoxylin and eosin.

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WHITE: A NEW COLOUR LOCUS IN *KERRIA LACCA* (KERR)

Introduction

THE white lac insect was first picked up in a F_4 progeny from a cross of two distinct races of the common Indian lac insect, *Kerria lacca* (Kerr)[1]. The discovery was considered significant because of the industrial demand for a colour-free lac resin. Later, however,

it was recorded occurring in low frequencies in certain natural populations of *K. lacca*, which had suggested that this could be a recessive mutant with a selective disadvantage in its natural environment[2]. This communication reports the results of crosses of the white with the other colour forms of these insects.

Meterials and Methods

The insects used in crosses with the white variant originated from the laboratory maintained homozygous stocks of (i) the wild-type crimson which produces a yellow resin, and (ii) the yellow mutant, in which the insect colour is changed to yellow, but the resin colour remains unaffected. The white produces no colour either in the insect or in its resin. The test insects were maintained on potted plants of *bhalia* (*Moghania macrophylla*) covered by a fine muslin cloth cage to control contamination and to prevent losses due to parasitic and predatory activity. The progeny was scored at the time of sexual maturity since the lac larvae, on hatching, invariably retain the colour of their mother and the change in colour produced by their own genotype becomes apparent only after they have grown for some time on the host plant, usually in the second instar[3]. Five or more progenies were scored from each class of mating.

Results

Reciprocal matings of the white and wild-type stocks of *K. lacca* produced only wild-type progeny, confirming dominance of the wild-type over white. The F_1 females were mated to the white males. Table I shows the testcross distribution in crosses of these colour forms. The parental colour forms reappeared in a proportion which did not deviate significantly from parity. The colour-free state of the white lac insect thus behaves as a simple recessive. A gene symbol *w* is proposed for the new mutant gene which blocks the production of colour in both the insect and its resin.

TABLE I

The testcross distribution of white and wild-type in crosses of the two colour forms in K. lacca

	White	Wild-type	Total
Observed	1074	1146	2220
Expected*	1110	1110	2220

* Expected if the white was a simple recessive condition.

$\chi^2 = 2{\cdot}34$. $P > 0{\cdot}1$.

Crosses of the white and yellow mutants produced wild-type progeny, confirming that the gene for white is non-allelic to that for the yellow. The white is thus the second colour locus in *K. lacca* which is shown to be subject to allelic segregation causing variation in the colour of the insect and its resin.

During the course of these experiments, the white was found to have a much reduced fecundity and survival. This explains the low frequency occurrence of white in natural populations of these insects recorded earlier[2] and reduces its utility as an insect of commerce.

Discussion

Chemical investigation of the lac insect pigments has shown that these are anthraquinone derivatives and are of two distinct types. The one found in the insect is water-soluble and is termed as laccaic acid. The other present in the lac resin is water-insoluble, but spiriti-soluble and is referred to as erythrolaccin[4]. More recently each of these pigments is shown to be associated with a number of closely related compounds and, based on chemical evidence, a tentative biosynthetic scheme has been suggested, in which the laccaic acids and erythrolaccins are regarded as the end products and their biochemical origin is traced to a common precursor what has been termed as laccaic acid D[5,6]

The evidence presented here shows that a single gene mutation has blocked the biosynthesis of both the laccaic acids and erythrolaccins in the white variant. This confirms their common biochemical origin suggested earlier on chemical evidence. The yellow gene changes the insect colour, but leaves the resin colour unaffected, suggesting that it probably affects the independent pathway of the laccaic acids. Similarly, mutations can also affect the resin colour exclusively, and such mutations, by virtue of allowing the insect to retain its body colour, might be expected to do away with the biological weaknesses of the white mutant to help produce the much needed white lac. A knowledge of other colour mutations and their biochemical effects on the lac pigments will now be awaited with great interest for the solution of the all important colour problems in lac.

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