

pretation of the results we have obtained, on the basis of a theory of chain reactions.

In conclusion, we wish to express our sincere thanks to Prof. N. N. Semenov, the director of the Institute of Chemical Physics, for his interest and advice during the course of this work.

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Leningrad, Oct. 10.

- ¹ *Zeit. physik. Chem.*, B, 1, 125; 1928.
² *Trans. Far. Soc.*, 24; 1928.
³ *Proc. Roy. Soc.*, A, 125, 294; 1929.
⁴ *Ann. Ch. Phys.*, V, 6, 304; 1817.
⁵ *Proc. Roy. Soc.*, A, 5, 122; 1929.
⁶ *Zeit. physik. Chem.*, B, 6, 307; 1930.

The Comma Butterfly in England.

I HAVE just seen the correspondence in NATURE for Oct. 31 regarding the Comma butterfly in England, and it occurs to me that some observations I have made in the south-western parts of the country may throw some light on the increasing frequency of this insect.

About twelve years ago it was usual to see perhaps four or five specimens of the Comma each year, sunny days during early October being the time when most were to be seen, but hibernated specimens were also seen on warm days in March. During more recent years, however, the number of Commas seen has very much increased, particularly during the last three or four years, not only in Somerset, but also in Dorset and Hants as well. I have noted several occasions during the last two years, both here and in the New Forest, upon which the Comma has been quite the most abundant butterfly to be seen. I have seen as many as thirteen simultaneously on one small *Buddleia* bush in the town of Bournemouth.

What appears to me, however, to be the most striking change with regard to this butterfly lies in the fact that formerly it used only to be seen here in spring and autumn, whilst during the last three years at least it has been double-brooded in this district, numerous specimens being seen about the end of June and during July also. This double-broodedness has been confirmed by finding larvæ of both broods and also a pupa of the first brood. In addition to this, in Somerset at all events, the larvæ do not now feed exclusively on hops, but also on the common elm. The perfect insect has been successfully reared from larvæ found feeding on each of these plants. Without any special search being made, twenty-five larvæ have been found during the last two years. These observations seem to suggest that the habits of the Comma butterfly have undergone a change which may well account for the greater numbers observed during recent years.

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Preservation of the Australian Flora and Fauna.

ON behalf of many people and organisations who are trying to save the Australian flora and fauna, I desire to thank you for the very sympathetic reference to the preservation problem made in NATURE of Sept. 12, 1931. Recently both governments and people have shown an increasing desire to try to save the disappearing animals and plants. This has been evidenced by the passing of the Wild Flowers Preservation Act both in New South Wales and Victoria, and by the extension of the Wyperfeld (Mallee) National Park in Victoria by the present

Minister of Lands in Victoria, Mr. Bailey. Other proposed reservations are under consideration.

Particular acknowledgment should be made to Mr. F. Lewis, Chief Inspector of Fisheries and Game in Victoria, who has been most helpful in co-operating with various societies in the endeavour to preserve the unique creatures which at one time existed in Australia in very large numbers.

The Wyperfeld Park, situated about three hundred miles north of Melbourne, now covers thirty-six square miles of country and is one of the most interesting places on an interesting earth. The rainfall is very small, but the Park is traversed by the bed of the ancient Wimmera River, which in geological times flowed into a huge gulf of the sea in the north. The river now runs through the Park about once in ten years and then disappears in the sand north of the Park, but the water remains in the water-holes for three or four years before it evaporates. During the wet period, aquatic birds abound. Water is obtained in the dry period by wells and is used by the birds and animals. Along the bed of the river, red-gum (eucalyptus) grows profusely. Away from the river there is the usual semi-desert Mallee country. The birds nest in the red-gums, but apparently feed mainly in the outside country.

The Park is the home of the parrot and cockatoo family, which is increasing in numbers. It also contains emu and some of the black-faced Mallee kangaroo. Its profound interest is the way in which forms of life have survived and thrived in comparatively rainless conditions. The adaptation is remarkable.

Owing to the cultivation of the Mallee, the Leipoa or Mallee hen, popularly known as the Lowan, has practically been driven to seek refuge in the Park, and on a recent visit at least three of the nest mounds were found. There may have been many more, but they are not easy to find in the Mallee scrub, as there is no indication of their presence until one walks on to them.

Since the Park has been declared a National Reservation and has been patrolled, birds and animals have increased in numbers. Perhaps one of the most important features of the change is that the people living in the district have begun to take a pride and an interest in this unique portion of the globe.

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Distribution of Agar-liquefying Bacteria.

SEVERAL strains of an organism which attacks and softens agar-agar have recently been isolated in this laboratory. The organism forms small, slowly growing, yellow colonies which grow well in the usual agar media; the colony is invariably situated in the centre of a circular area of softening. The 'hammered copper' appearance thus given to the plate is characteristic. No strain liquefies the agar. In stroke cultures the whole of the agar is in time softened, though growth does not proceed except on the surface.

The sources of the organisms were a swampy garden soil from Palmer's Green, London, and the clover side of Agdell Field, Rothamsted, both sampled in wet weather this spring. Most strains appear to be common to both soils. The optimal growth of most of the strains occurs in a medium containing about 0.3 per cent of sodium chloride, but one strain from Palmer's Green has grown on a medium similar to