

OCCASIONAL NOTES.

NOTES FROM THE PERSIAN COAST. It was a pleasant surprise amid the barren surroundings of coastal Persia, to discover that the riverine strip along the Shat-al-Arab gives permanent shelter to a small population of black partridge. For a depth of perhaps half a mile along the river bank the Arab-Persian population cultivates its date-palms and during the temperate winter months the gardens, formed into plots by a random pattern of irrigation ditches are filled with small food crops. Patches of lucerne survive, of course, all the year round and the coarser vegetation defies a sun radiation of 175°. It is here that the black partridge hides during the heat of summer, close to the tidal (fresh water) ditches. Spring comes early after the brief, severe winter spell and I found a hen sitting on her eggs in lucerne in late February. In March, chicks were observed in the marsh areas around Dorkwain about fifteen miles inland, where I saw greylag geese, estimated from a rough count at 500, on one of the larger "meres." With them the mallard and wigeon, the teal and redshank, plover and snipe patterned the sky in their evening flights. Another migrant, who with customary fearlessness became a constant companion in our mess garden, was the robin. His visits, regular because encouraged, frequently met with expostulations from our pet goose, who resented any diversion of attention from herself.

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FIELD NOTES ON SECRETARY BIRD. Nest at Molo used in April, 1941, in *gambura* tree, 15 feet up, on top of tree. Took the *only* egg; there were four potatoes in the nest with the egg, three pecked-at and one untouched. Potatoes were definitely from Kikuyu *shambas*, half a mile distant. Not known whether birds actually sat on potatoes after egg was taken, probably not.

There was a dead (yellow ?) mongoose in centre of nest, believed to have been killed in nest whilst trying to steal egg, the neck and back torn open.

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EELS AND TROUT. As is generally known all rivers which debouch into the Indian Ocean contain eels; the most common being the variegated eel *Anguilla mosambica*. These eels grow to a weight of 24 lbs. and during the past five years they have penetrated further into the regions containing the big trout. It is believed that temperature is the controlling factor as physical features, such as waterfalls, present no difficulty to the upward migration of an eel. For instance, there are many eels in the Chania River, above the Thika Falls.

It is also believed, although no actual data over a sufficient span of years can be produced, that the Gura, Nyeri Chania, Sagana, and Amboni Rivers are getting warmer. Anyway there are eels now in stretches of the Gura River where seven years ago they certainly were not. These big eels feed on big trout, and as a result of this gradual invasion the number of big trout, in the Gura has got less and less.

Many persons have cast doubt on this fact, as they have never seen any eels. The reason for this is that the eel does its deadly work during the hours of darkness. Other people have wondered how a large trout can be caught and killed by an eel. Recently, the officers of the Game Department have gained much knowledge on this subject. A trout, running say from 3 lbs. to 6 lbs. in weight, is lying in position behind a large rock or in a deep pool. The eel comes nosing along and runs its nose against the flank of the trout without the latter taking the slightest notice. The eel then nips the trout in the soft flesh of the belly just in front of the ventral fin. Away goes the fish with a rush and takes refuge behind another rock or in another part of the pool.

The eel comes questing up and within ten or fifteen minutes does exactly the same again. Away rushes the fish and the procedure is continued until the trout is completely exhausted when the eel makes a meal from the belly. The time taken was, in one example, just under an hour and a half.

The photograph, Plate 21, shows a beautiful hen brown trout of 3½ lbs. from the Gura. This trout had been killed by an eel. Within a very short time, the eel was located, caught and weighed 9½ lbs.

There is no doubt, but that this upward invasion of some of our rivers has had a very serious effect on the big trout of the lower waters.

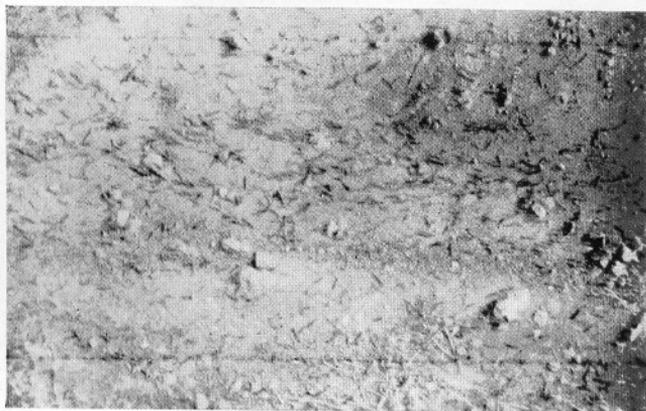
HUGH COPLEY.

PLATE 21.

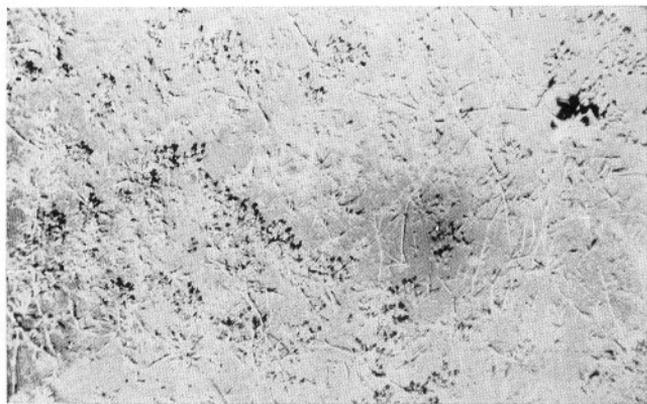


Hen brown trout killed by an eel.

PLATE 22.



Army-worm on the move.



After the army has passed, untouched clover plants and rhizomes of Kikuyu grass are left.



Kites enjoying the army-worm.

SOME NOTES ON THE ARMY-WORM INVASION OF THE NAIROBI DISTRICT IN MARCH, 1940. Before giving a brief account of the army-worm invasion and its effects on pasture in the Nairobi district, it is perhaps worth recording that some of the older European inhabitants of Kenya hold that there is a connexion between the migration of pierine butterflies of the genus *Glycestha* and army-worm infestation. Actually this recent infestation was foretold to me by a Kabete resident following the extensive easterly migration of *Glycestha* [mostly *G. aurota* (Fab.)] which occurred between July 16th and 30th, 1939, and covered, to my knowledge, the area between Ndeya and the outskirts of Nairobi. It will be interesting to observe if future migrations of the white butterflies are followed by plagues of larvae of the noctuid moths.

It is, of course, possible that factors causing the butterfly migration may also lead to the migration of the moths; but if the moths migrated to the Nairobi district in July, 1939, it is probable that a small undetected brood of larvae developed during the short rains of that year and that the larvae of the 1940 invasion developed from eggs laid by this earlier brood.

In March, 1940, at Kabete, the grass-rains began with a fall of about $1\frac{1}{4}$ inches during the night of February 27th, and this was followed by a little over $\frac{1}{2}$ inch on the following night. This amount of rain was sufficient to produce a green cover over the Laboratory paddocks which, previously, had been grazed almost bare. On March 2nd, there was a shower during the afternoon and on the 12th, army-worm were first noticed in the golf-course paddock. (On March 14th, army-worm were found in the gardens along Sclater's Road between the Showground and Westland's railway crossing.) The larvae were noted in the one-acre paddock adjoining my garden on the 15th, and three days later, they entered the garden.

By March 20th and 21st, hardly a blade of grass was left in the Laboratory paddocks except in the shade of trees. The larvae appeared to avoid all patches of dense shade and ceased feeding and travelling at dusk. The paddocks and lawns were now a depressing sight and it became necessary to revert to the supplementary feeding of the cattle.

Meanwhile five larvae had been collected in order to breed moths for examination. On March 22nd, these larvae began to pupate and at the same time the larvae in the paddocks began to "go down." By the 26th, hardly any larvae could be found in the fields. Only two months (*Laphygma exempta* Walk.) emerged from the five pupae kept under observation and they appeared on April 11th and 12th. Thus the pupal period was about twenty-one days.

The difficulty of controlling these pests was demonstrated by the experience of Mr. D. C. Edwards, Senior Agricultural

Officer, in attempting to prevent the army from advancing into his experimental plots. Whilst it was possible to stop the advance of the larvae across the bare strip of about three yards width surrounding the plots, it transpired that eggs had been deposited actually in the plots themselves and the control of the larvae hatched from these, presented a much more difficult problem.

Observations in the paddocks and garden showed that the larvae ate all species of *Gramineae* and *Cyperaceae* that they encountered. Even the coarse blades of *Pennisetum purpureum* Schum. were attacked. No damage was observed to plants of other orders except that garden montbretia, *Tritonia crocosmiflora*, N.O. *Iridaceae*) leaves were partly eaten.

This selective feeding had a marked effect on the Laboratory paddocks. The Laboratory is situated at the lower limit of the Kikuyu grass country and careful management of the grazing is necessary to preserve over most of the area the Kikuyu grass-clover (*Pennisetum clandestinum*—*Trifolium johnstoni*) associates. Insufficient grazing leads to the suppression of the clover, a species which is easily choked out if the grass becomes long, and loss of clover leads to a fall in fertility when coarse undesirable grasses tend to replace the Kikuyu grass.

It will be recalled that the army-worm made their appearance shortly after the first rain when the grass was about 2 to 3 inches high. Owing to various factors one hillside in particular had many seedlings of ruderal grasses (e.g., *Eragrostis tenuifolia* Hochst., *Harpacne schimperii* Hochst., *Aristida adoensis* Hochst.). The army-worm consumed practically all the grasses growing on this hillside; but left the clover. The further rain which fell after the army-worm invasion caused the clover to push ahead. Rhizomatous grasses, such as Kikuyu grass also came away rapidly; but the majority of the other grasses were completely destroyed. A few derived from seeds late in germinating appeared later in the season in the barer spots. The invasion was, therefore, on the whole beneficial to the pastures.

In areas to the east of Nairobi, where the *Acacia*-tall grass savannah formation holds, the results of the invasion were, of course, entirely different. The main associates of grasses on the Athi Plains is *Themeda triandra*—*Pennisetum masaicum*. The later rain did little to restore the growth of edible grasses and over much of the land *Senecio discifolius* Oliv., *Conyza* spp. and other composite weeds, which were not destroyed by the larvae, formed most of the low vegetation for several months.

At Kabete, many hundreds of larvae were destroyed by kites (*Milvus migrans parasitus*) a dozen or more often being seen strung out in a line along the advancing stream of army-worm.

Other factors, however, must have helped in controlling the pests for, although at the time that the caged pupae gave

rise to imagines, there was ample fresh grass available, no further trouble was experienced. The fact that two moths were obtained so quickly from five larvae suggested that a further outbreak might occur and that we should be short of grazing until the short rains. We were, therefore, greatly relieved when no fresh brood of larvae appeared.

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NOTE ON GADWALL. During December, 1942, and January, 1943, three more specimens of gadwall (*Anas strepera*) have been received at the Coryndon Memorial Museum, Nairobi. All three were shot near Lake Nakuru. It would seem, therefore, that this duck is not altogether a rare visitor to Kenya. (See note on gadwall in this *Journal*, 16, 223.)

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