

Though the problem differs considerably from one country to another, it may be illustrated from Greece. Out of 1,007,000 farms, only 1,033 exceed 50 hectares (125 acres), whereas 860,304 are less than 5 hectares (12.5 acres). There, rather more than half the land belongs to the farmers, rather less than half to the State, monasteries or a small number of landlords, "whose interest in agriculture is slight or non-existent". Progress in consolidation varies greatly. As the report from Spain says, "the problem has been a matter for discussion for more than 100 years"; despite the urgent necessity, no order was made until December 20, 1952. Now, schemes can be started there either officially or at the request of at least 60 per cent of the farmers affected. It is

interesting to note that even in the short time since the passing of the order, 257 villages covering 385,000 hectares and affecting 40,000 farmers have applied. Although France is not so badly affected, a law of March 9, 1941, had led by October 1954 to 4,910 schemes affecting 3,600,000 hectares out of a total of 50,500,000 of the agricultural area of the country. In general, it would seem that with varying speed the needed agricultural revolution is taking place. But it would also seem that the owner-occupier small-holding is being made the ideal; peasant-proprietors are replacing landlord and tenant. Consolidation into large holdings of several hundred acres, which technologists claim as the most efficient economically, remains almost unknown. L. DUDLEY STAMP

SIZE DIFFERENCES IN CUCURBITA

SIZE differences have been studied by K. E. von Maltzahn (*Canad. J. Bot.*, **35**, 809, 831; 1957) in vegetative organs of two pure-bred strains of *Cucurbita pepo* L. which differ greatly in size by their genotype. The growth pattern of plants of the selected strains was found to be essentially the same in the two types. The two strains exhibited great differences in mature organ size, but only small differences in number of organs. No correlation was found between embryo size and mature size. In the early stages of primary shoot development, however, a correlation was found between embryo size and the rate of initiation of new organs. This correlation disappeared during the later stages of plant development. The parental strains had similar rates of organ formation, while the crosses showed hybrid vigour with respect to rate of new organ formation. Sizes of the apical meristems and organ primordia were essentially the same in the large and small strains and did not appear to determine mature organ size differences.

Development of size differences between the same organs of the two strains and the crosses was found to be mainly due to duration of organ growth. Rates of organ growth differed only slightly between the strains. Increase in size of successively formed organs of the same strain was also found to be mainly due

to duration rather than to rate of organ growth. Mature organ size has been analysed for the two strains on the histological and cellular levels with particular emphasis on mature internode size. Differences between the strains in tissue and cell size were observed for the main tissue and cell types. Differences in internode length were determined both by differences in cell size and cell numbers. Cambial activity as expressed in numbers of radial immature derivatives and in number of divisions in the inter-fascicular regions was found to be much greater in strain *CF* than in *SRC*.

No important differences were found between the large and small strain in the size of the meristematic and submeristematic regions. Early internode growth in terms of cell division and cell enlargement was also found to be similar in the two strains. It is concluded that the cellular differences found in the mature organ must be due to a longer duration of growth mainly in terms of cell enlargement but also in terms of cell division. This conclusion is supported by the results obtained on internode growth described in a previous paper. Grafting experiments with apical buds of the two strains did not show any influence of the stock on the scion; mature organ size was determined only by the scion.

THE SEA OTTER

AN account of the sea otter has been given by Karl W. Kenyon of the United States Fish and Wild Life Service (*Oryx*, **4**, No. 3; November 1957).

In general form the sea otter, *Enhydra lutris*, resembles the weasel and river otter, but is larger in size. The male attains a weight of 85 pounds, the female about 65 pounds; the young at birth weigh 3-5 pounds. It is peculiar among members of its family, the Mustelidae, in having deserted dry land and fresh-water to take up a marine life. Among marine mammals it is peculiar in its adaptation to the sea. It does not possess an insulating layer of blubber but is protected from the chill of the North Pacific waters by a blanket of air trapped among the fine and closely packed fibres of its inch-long, delicate fur. Unlike the river otter and fur seal, the sea otter has but little protective coating of guard hair. The fine guard hairs present add to its beauty but do not offer much protection to the under-fur. Unlike other marine mammals, the sea otter has never taken to the

open sea. It usually feeds in shallow water from 5 to 50 ft. in depth. Its food consists primarily of such sedentary forms as sea urchins, rock oysters, mussels, a variety of snail-like molluscs and, in California, abalones. Occasionally fish and octopus are eaten.

Although the sea otter is not ideally adapted to its marine environment, it is far more at ease in the water than ashore. The flipper-like hind feet are clumsy on land and the long flexible body is poorly suited to walking. When otters haul out to sleep or preen, they seldom venture more than a few feet from the water.

Otters come ashore in greatest numbers when storm waves make food-diving difficult. When the weather is calm they usually sleep on the surface of the sea, simply pulling a strand of kelp over their bodies, resting the head on the chest and placing their forepaws over their eyes.

In the Aleutian Islands at least, the breeding season of the sea otter is not well defined. Most pups are

born in April or May but newly born young are to be seen at other seasons. Mating takes place in the water and the mated pair may remain together for several days.

Like other marine mammals the sea otter bears but one pup at a time but, unlike most of them, the mother otter gives her offspring constant and careful attention over a relatively long period, probably until it is nearly a year old. For several months the pup receives most of its nourishment from its mother's two abdominal nipples, though at an early age it may also beg for and receive parts of sea urchins and molluscs that its mother is eating. She carries her pup on her chest while she herself swims on her back.

When the ships of Captain Cook dropped anchor at Macao after having visited Nootka Sound, Vancouver Island, the crews discovered that skins which they were using as bed clothing and garments, and which they had purchased cheaply from the Indians, were worth thousands of dollars. Thereafter, the soft fur of the sea otter was the objective of many of those who explored the coast and islands of the eastern North Pacific Ocean.

Under the direction of white fur-hunters, sea otters were mercilessly pursued, sometimes by teams of Indians in canoes; in more remote areas by white hunters in light skiffs carried to the otter grounds in larger ships. So highly was the sea otter prized that by the end of the nineteenth century it had been hunted almost to extinction. The otters living off the western coasts of the United States were thought to be extinct. Even yet none has been found on the coasts of Oregon or Washington, but in 1938 a group of 94 sea otters was discovered near Monterey, California. Now the Californian otters are said to number about five hundred, living under complete protection.

In 1786, the Pribilof Islands were discovered by Russian fur hunters and their history shows similar thoughtless exploitation. In the first year of occupation as many as five thousand sea otters were killed. By 1811 they were scarce animals and during the next thirty years were virtually exterminated. The last recorded skin in the Pribilofs was taken from an otter found dead in 1892. Of this once thriving colony only scattered bones remain.

RADIAL VELOCITIES OF SOUTHERN B STARS

A SECOND paper with the title "Radial Velocities of Southern *B* Stars", by M. W. Feast, A. D. Thackeray and A. J. Wesselink, of the Radcliffe Observatory, appears in *Mem. Roy. Astro. Soc.* (68, Part 1). The observations are the second stage in the determination of radial velocities of southern *O* and *B* type stars at the Radcliffe Observatory, Pretoria. In the first stage, the 147 stars were of magnitude 7.5 or brighter and with spectral type *B5* or earlier, but in the second stage much fainter stars were observed and every effort was made to select the most distant stars available. Oosterhoff's photoelectric observations (*Bull. Astro. Inst. Neth.*, 2, 299; 1951) were utilized and the initial programme consisted of all stars for which this list gave a corrected distance modulus $m_0 - M \geq 11.0$. This selection accounts for about 75 per cent of the 130 stars considered. Greater average distances than those in the authors' first paper are ensured by the fact that all Oosterhoff's stars had *HD* types *B₂* or earlier, with a few Wolf Rayet stars. Another important fact is that the criterion $m_0 - M \geq 11.0$, which was based on photoelectric colours and *HD* types, provides fairly good

evidence that faintness is due to distance rather than to obscuration. The observing list is extended by the addition of a number of stars recently classified as *O* or *B* supergiants, and a few of special interest in the Carina region.

The instrument used was the 2-prism Cassegrain spectrograph attached to the Radcliffe 74-in. reflector. The faint stars catalogued in the paper demanded the use of a fast emulsion, and while this had probably little effect on the accuracy of the mean velocities, nevertheless the poor line stars were often difficult to measure, in spite of the wider trailing of the spectra. The standard slit-width for the *c* camera was 0.075 mm. and for the *b* camera 0.050 mm.

Other matters that are referred to include standard wave-lengths, contributors to programme, and observations. Under the latter it is pointed out that the velocities are being analysed for galactic rotation and the results will be published later. The preliminary investigations indicate that the fainter stars must be at a mean distance about $2\frac{1}{2}$ times that of those in the first paper, and in consequence the analysis will be obliged to take into account second-order effects.

AN EXPERIMENT ON THE INTERACTION BETWEEN A PLANE SHOCK AND A MAGNETIC FIELD

By DR. K. DOLDER and DR. R. HIDE*

Atomic Energy Research Establishment, Harwell

THIS is a preliminary report of an experimental investigation of the hydromagnetic interaction between rapidly moving, hot, ionized (and therefore conducting) gas and an intense magnetic field. The experiment has two essential features. First, the gas flow is so rapid that dynamical effects of compressibility are present; and secondly, the system has axial symmetry.

* Present address: Physics Department, King's College, University of Durham, Newcastle upon Tyne 1.

When a fluid of density ρ , permeability μ and electrical conductivity σ moves relative to a magnetic field of strength B , electrical currents are induced. It may be shown on general theoretical grounds that unless the dimensionless parameter

$$R_1 \equiv 4\pi LU\sigma\mu \quad (1)$$

is small compared with unity (where L is a length characteristic of the scale of the system and U is a typical flow velocity), these currents will seriously