volvulaceæ. Three species of *Chelymorpha*, a New World genus allied to *Physonota*, have been found on three species of *Solanum* (Solanaceæ), including the potato. Three species belonging to two other genera of the New World have also been known to eat plants of *Solanum*. It seems likely, therefore, that *Physonota*, too, may feed on *Ipomœa* and *Solanum* as well as on *Cordia*.

Among the Gramineæ, both *Zea Mays* and *Saccharum* (sugar-cane) are attacked by *Chelymorpha*, the former also by a species of *Cassida*, a genus occurring in both New and Old Worlds; *Chirida*, another New World cassidine genus, also feeds on sugar-cane.

It is important to note that *Chelymorpha*, closely related to *Physonota*, has at least one species which is capable of eating the sugar-cane plant, and it is in the sugar-cane plantations that *Cordia* has become a nuisance. It is hoped that the introduced *Physonota* will behave as it is expected to do; but warning should be given that it may take a liking to sugar-cane, and even to the potato and sweet potato.

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Record of an African Fodder Grass from Central Burma

A NUMBER of exotic plants occur in the dry zone of central Burma. The annual rainfall of this area is only 25–35 in. in one monsoon, and the general vegetation is predominantly xerophytic—such as thorny shrubs, succulent species of *Euphorbia* and ephemerals. Some of these foreign plants are so well established that they could easily be mistaken for indigenous plants.

One of the common grasses of this dry zone is a scandent drought-resistant fodder grass, usually found trailing over thorny shrubs and common in hedgerows. This grass was sent to Kew in 1942, and has been identified by Mr. C. E. Hubbard as *Urochloa mosambicensis* (Hackel) Dandy[1]—a native of Central and East Africa. Other synonyms by which this grass is known are *Panicum mosambicense* Hackel[2], *Panicum notabile* Hook.f.[3] and *Echinochloa notabile* (Hook.f.) Rhind[4]. Both Hook.f. and Rhind expressed their doubts as to its affinities under the genera *Panicum* and *Echinochloa*, and Rhind contrasted its xerophytic characters with other species of *Echinochloa* of Burma.

On account of its value and possibilities as a fodder, this grass has attracted attention in Africa and Burma independently. It has been also introduced in Australia (Queensland), where it is said to be thriving well. It must have reached Burma very early, as Wallich collected it near the oilfields around Yenangyang in 1826 (Wall. Cat. 8723). Intentional introduction before Wallich's time is extremely unlikely, as traffic between the coasts of East Africa and Burma in those days was always scanty. Nevertheless, this appears to be the only possible route, as the plant is not recorded so far either from India or Malaysia. It is also not known how the plant reached Central Burma from the port (Rangoon), traversing the belt of heavy rainfall and swampy areas quite unsuitable for its growth. Most probably this took place accidentally, and the seeds must have been carried by river boats up the Irrawadi to the dry areas of central Burma, where the plant established itself.

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[1] *J. Bot.*, **69**, 54 (1931).
[2] *Bolet. Soc. Broter*, **6**, 140 (1888).
[3] *Fl. Br. Ind.*, **7**, 32 (1897).
[4] "The Grasses of Burma", 50 (1945).

Errors of Estimation in Inverse Sampling

IF a random sample of N individuals is taken from a population in which a proportion $P (= 1 - Q)$ possess a certain attribute, and of these N are found to possess the attribute, then, as is well known,

$$p = a/N$$

is an efficient and unbiased estimate of P. The variance of p is PQ/N; but unless N is large neither this quantity nor an estimate of it can be used directly in order to assign fiducial limits to p. If a probability level, say 0·05, is selected, upper and lower fiducial limits, p_U and p_L, may be defined; these are such that if P were equal to p_U, the probability of obtaining a or less individuals with the attribute in a sample of N would be 0·025, and if P were equal to p_L, the probability of obtaining a or more in a sample of N would be 0·025. Evaluation of p_U and p_L by successive approximation and summation of terms of a binomial expansion is tedious, but a table by W. L. Stevens[1] enables these 'true' limits to be obtained rapidly with sufficient accuracy for most practical purposes.

An alternative method of estimating P, that of *inverse sampling*, has been suggested as possessing advantages in some circumstances. This consists in taking individuals at random until a specified quota, A, possessing the attribute has been obtained. If this requires a total sample of n, the estimate of P is

$$p = (A - 1)/(n - 1);$$

the variance of p is approximately

$$s_p^2 = p^2q/(A - 2),$$

but s_p cannot be used for assigning fiducial limits to p except in large samples.

It may not have been generally realized that methods and tables for determining true fiducial limits for direct sampling may be adapted very easily to inverse sampling. For if p_U is the upper limit to a value of p estimated from inverse sampling, by definition it is the value of P for which the probability of obtaining the quota, A, in n or more trials is 0·025; this is the same as the value of p which, in direct sampling, would give $(A - 1)$ or less with the attribute in a sample of predetermined size $(n - 1)$. So p_L, the lower limit, is the value of P which would give the quota in n trials or less with a probability of 0·025, and is therefore the same as the value of p which, in direct sampling, would give A or more with the attribute in a sample of n. Hence the rule may be stated: in inverse sampling, the upper fiducial limit is the same as the upper limit for a direct sample with $N = (n - 1)$, $a = (A - 1)$, and the lower fiducial limit is the same as the lower limit for a direct sample with $N = n$, $a = A$. Stevens' table, entered according to his rules with the appropriate values of N, a, will then give the fiducial limits.

Haldane[2,3] has pointed out that, when p is small, its standard error in inverse sampling is practically a constant proportion of p for any fixed value of A.