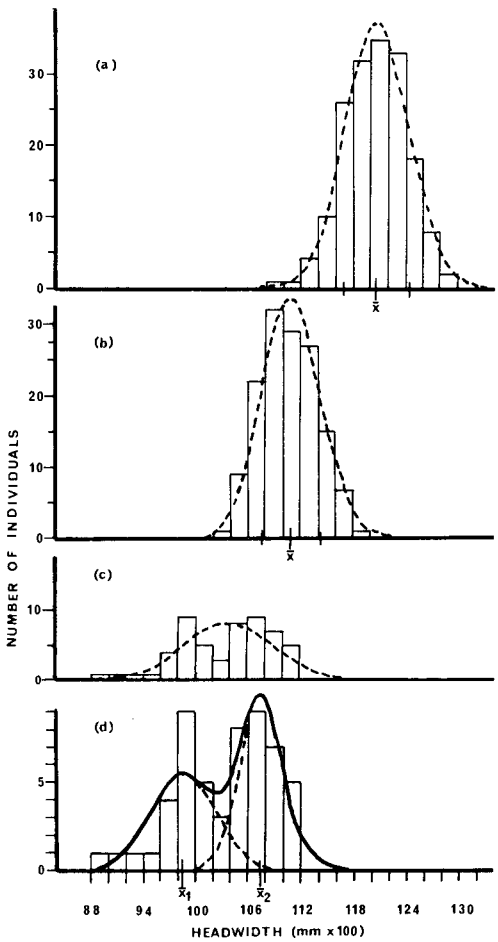


FIG. 5. Frequency distribution of headwidth for all the individuals measured. Best fit normal curves are superimposed. *M.sabuleti* (a), *M.scabrinodis* (b) and *M.hirsuta* (c) and (d). In (d) the scale has been enlarged and the data are best described by two normal curves.

*M.scabrinodis* has a relatively slightly longer head than the other two species. Overall a moderate separation of the three can be made on head size alone. Fig. 5 shows the frequency histograms of headwidth of the three species with superimposed normal curves that are described by the means and standard deviations given in Table 1. $\chi^2$ tests show that a normal curve fits the data for *M.sabuleti* ($P$ = 0.99) and less well for *M.scabrinodis* ($P$ = 0.85). Surprisingly, a normal curve is a bad fit to the data for *M.hirsuta* ($P$ = 0.30); however, if the data are divided into two, approximately equal portions, two normal curves can be calculated that fit with a probability of 0.72. These have means of 1.064 ∓ 0.024 mm (mean of thirty individuals) and 0.974 ∓ 0.036 mm (mean of twenty-four individuals). The implications of two sizes of *M.hirsuta* will be considered later.

If the distribution of frons width relative to headwidth is examined the three species form distinct clusters and while there is a positive correlation of frons width with headwidth within each cluster there is no overall isometry. The regressions through the three clusters are:

*M.sabuleti*

Frons width = 0.310 Headwidth + 0.022 ($P < 0.001$)

*M.scabrinodis*

Frons width = 0.340 Headwidth + 0.021 ($P < 0.001$)

*M.hirsuta*

Frons width = 0.395 Headwidth + 0.013 ($P < 0.001$)

The frons ratios, calculated from the means, are 34.6 for *M.sabuleti*, 37.7 for *M.scabrinodis* and 41.5 for *M.hirsuta* which agree well with other estimates (e.g. Collingwood, 1958). Unfortunately from the data we can calculate that if an individual with a frons ratio of $>37$ is called *M.scabrinodis* and one with a ratio of $<35$ is called *M.sabuleti* we have misidentified 15% of *M.sabuleti* and 3% of *M.scabrinodis* while a further 27% of the *M.sabuleti* and 20% of the *M.scabrinodis* fall between the two limits and cannot be identified confidently; yet if we consider the clusters formed by frons width plotted against headwidth, only about 5% of the *M.sabuleti* and 3% of the *M.scabrinodis* obviously fall amid the wrong cluster. Therefore, when considering individuals, frons ratio is a useful guide but a fallible one, whereas plotting the value of frons against headwidth amid a body of data is much more reliable. The same argument applies to the separation of *M.scabrinodis* from *M.hirsuta* but *M.hirsuta* can be separated well from *M.sabuleti* on frons ratio.

If the frequency distribution of the values for post-petiole width are plotted against headwidth it is apparent that although the values for *M.sabuleti* and *M.scabrinodis* form two distinct clusters, taken together post-petiole width is isometric with headwidth.