LETTERS TO THE EDITOR

STATISTICS

Sir,

Ian Barton's letter aroused my interest and some sympathy. I suspect that many non-statisticians tend to use statistics blindly and in place of scientific commonsense.

There is perhaps little truth in Disraeli's "lies, damned lies and statistics" but there is often considerable merit in regarding statistics like the lamppost and the drunk — much more use as a source of support than for illumination.

In science today statistics are essential and irreplaceable as we look for and evaluate small differences between and within complex sets of data. In the past, when we dealt with smaller sets of data and greater and more obvious differences, the time and skills needed for statistical analysis were often not available and probably not needed.

Modern computers make detailed statistical treatment both possible and more desirable but there will always remain situations in which statistics should not be a pre-requisite for publication. For example, in the early 1960s I was part of a group that diagnosed boron deficiency as the cause of dieback in pines in the Nelson district. We did this by treating less than six trees and defined the critical foliage level by analysing 12 samples. The results were evaluated by eye but because they were so clear cut no one queried them then and they have stood the test of time. In a similar situation today I believe that exactly the same approach would be the correct one. I also believe that today's ability to collect, handle, and analyse data is of itself no justification for designing experiments that produce it. Every research scientist should plan his work efficiently and this includes doing the minimum amount of work needed to produce an adequate result. A simple yes/no type of experiment (usually no statistics) is often highly desirable to indicate if any further experimentation is needed and if so how complex it should be.

A final plea to statisticians. How can we get away from the crazy situation where we treat everything that is significant at levels between 1% and 5% as being a homogeneous group (*) but anything that only makes significance at the 5.1% level is as different as chalk from cheese (ns). Not all results that are non-significant are insignificant.

Graham Will
Forest Research Institute
Rotorua

P.S. I have not seen Ian's paper but I suspect that he got his essential message across anyway — i.e., temperatures lower than $-3°C$ kill young kauris.