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THE PATTERN OF MYCOLOGICAL TAXONOMY

by

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Approximately 8,000 genera and at least 100,000 species of fungi have so far been proposed. Half of the genera and rather more than half of the species have already been relegated to synonymy but new genera and new species continue to be proposed at a high rate. In an attempt to determine the general pattern of mycological taxonomy during recent years a count was made of the new genera and species compiled in Petrak's lists in *Just's Botanischer Jahresbericht*, 1930-1944 (recently re-issued by the Commonwealth Mycological Institute, Kew), and in the *Index of Fungi* (1940-x, Commonwealth Mycological Institute) for every fifth year from 1920 to 1950. (It was originally intended to obtain such data for every year but the task is laborious and the samples taken are believed to be sufficient to indicate the general pattern.) In addition, the numbers of new combinations for the same years were counted. These last figures are considered to give an indication at least of the amount of revision and monographing being undertaken, an activity that would probably be more accurately reflected by the numbers of new synonyms but these have never been systematically compiled.

The general results are summarized in Fig. 1. For the whole period, in round figures, the average number of new genera per year was 50, of new species and new combinations 700 and 300, respectively. The numbers fluctuate from year to year (a major fluctuation can sometimes be attributed to a particular publication e.g. Velenovsky's *Ceské Houby* was largely responsible for the high number of species in 1920, Corner's monograph on *Clavaria* for the record number of new combinations in 1950) but inspection of Fig. 1 shows that (a) during the first fifteen years the annual number of new genera was somewhat in excess of that for subsequent years; (b) with the exception of 1920, the number of new species has tended to fluctuate about a mean of approximately 625; and (c) the number of new combinations has shown a tendency to rise since 1930.

A more striking result was obtained by plotting the annual numbers of new species proposed per new genus and for the new combinations expressed as a percentage of the new species, ratios which were also obtained for 1952 by sampling appropriate parts of the *Index of Fungi* (see Fig. 2). The curve for the "spp. nov./gen. nov." is seen to approximate to a straight line. For the whole period there have been on the average 14 new species for every new genus while from 1930 this ratio has remained approximately constant at 17-19 : 1. From 1920 to 1940 the new combinations remained constant at approximately 30 per cent of the number of new species but since then they have shown a marked relative increase and in 1950 actually equalled the new species.

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Fig. 1. Numbers of new genera, new species and new combinations of fungi proposed each year.

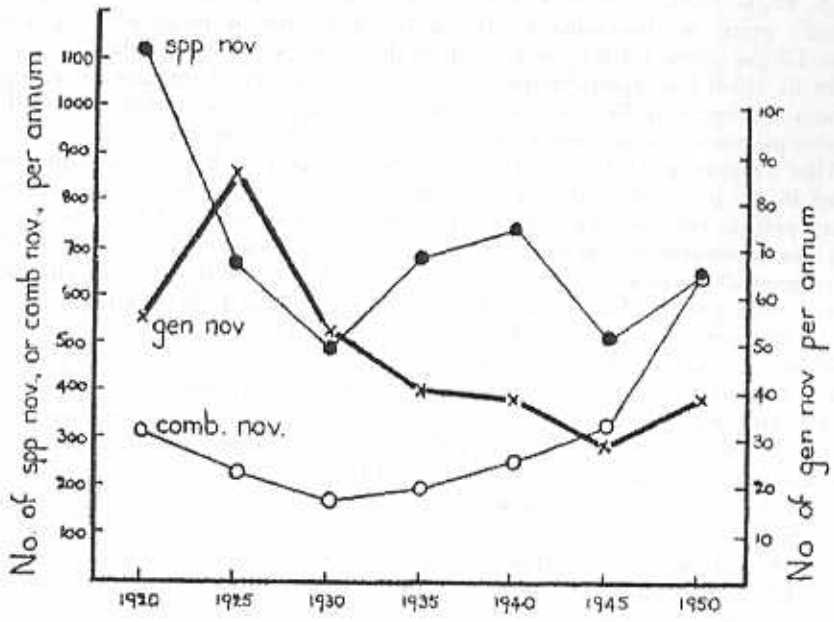
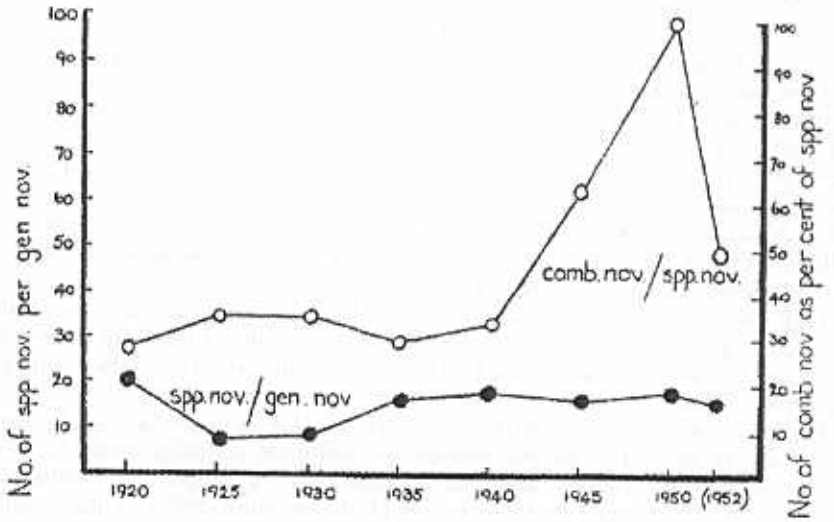


Fig. 2. Number of new species of fungi per new genus and number of new combinations as a percentage of the number of new species.



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The interpretation of Fig. 2 is not altogether clear. Why during the past twenty years the number of new species per new genus has remained constant is obscure. From the estimates of the numbers of fungi in Ainsworth & Bisby's *Dictionary of the fungi*, ed. 4, 1954, it appears that for all fungi the number of "good" species per "good" genus is approximately 10; different groups of fungi showing variation from 1.5 per genus for the Plasmodiophorales to 36 per genus for the Uredinales, an order in which host specialization is an important aspect of the species-concept. For lichens the figure is 40. One thing that does seem probable is that half of the new species proposed during recent years are destined for synonymy.

After remaining constant during the inter-war period the very welcome upward trend in the proportion of new combinations indicates that increasing attention is being paid to revision. Possibly the climate of opinion induced by a second world war has penetrated to herbaria and led more mycologists to think "globally". The more general and comprehensive use of air mail and air travel have also possibly played some part by facilitating exchange of material and information.

The next step was to study the place of publication of the new taxa in 1920 and 1950 by examination of a random sample of 250 from each of these two years. In the 1920 sample 31 journals and other publications were involved; in the 1950 sample 53, and only 5 publications occurred in both years i.e. the 500 new taxa were published in 79 publications. These five were the *Annales Mycologici* (and its successor *Sydowia*), the journals of the American, British, and French mycological societies, and the *Nuovo Giornale Botanico Italiano*.

When numbers of new taxa published in the four mycological journals for the two years were ascertained, from Petrak's list for 1920 and from the journals themselves for 1950, and then expressed as percentages of the totals of new taxa for the two years, the results were:

	1920	1950
Annales Mycologici (Sydowia)	16.4 %	20.0 %
Mycologia	4.1 %	6.6 %
Transactions of the British Mycological Society	0.8 %	4.6 %
Bulletin de la Société Mycologique de France	2.4 %	1.2 %
Total	23.7 %	32.4 %

This suggests that the proportion of the new taxa proposed in these three leading mycological journals has not changed greatly over the thirty years. The number of journals included in the two samples from the two years does, however, suggest that the scatter of mycological taxonomic publication has increased during this period.

Finally the percentage of the taxa in the two samples occurring in journals published in Europe, Asia, Africa, North America, South America, and Australasia was determined. European journals accounted for the greater proportion (1920, 72%; 1950, 66%) with North American publications second (1920, 20%; 1950, 15%). Although the values for other areas have little significance because of the smallness of the samples, it is interesting to note that the percentage of the new taxa in Asian journals rose from 1.2% in 1920 to 12% in 1950. It should perhaps be emphasized that these figures do not accurately reflect the geographical intensity of mycological taxonomy for new taxa based on fungi from one country are so often published in a journal of another.

While no mathematical significance is claimed for most of the results presented in this article and although the analysis of additional statistics would undoubtedly modify some of the conclusions, it is suggested that in general the results obtained do reveal the prevailing pattern of mycological taxonomy. Some of the implications of this pattern will, it is hoped, be examined in a subsequent article.