

Selected papers from early volumes of EXPERIENTIA

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On the following pages, we reproduce in facsimile a selection of contributions to early issues of EXPERIENTIA. It is a small selection, and inevitably biased by our own interests – but it will perhaps give an impression of some of the concerns of scientists in the first post-war years. We have concentrated on topics that are still characteristic of the journal, and have not included any of the work in earth sciences, physics, mathematics and astronomy which was published in the early years. Several of the papers reproduced here were suggested to us by members of the Editorial Board and other colleagues; we very much appreciate their help.

As is fitting in this Festschrift for our late founding editor, Hans Mislin, we begin with two of his papers. Both are on the electrophysiological studies of the contraction of vessels which were one of his main concerns as an experimental physiologist. The first, from 1948, is on the circulation in the wing veins of bats (1), and the second – published nearly 30 years later – is on the contraction of lymph vessels (2).

The next section is a group of papers on DNA. The first three, by the group around A. Boivin and R. Vendrely, at the Pasteur Institute in Paris and later in Strasbourg, are very early examples of studies on ‘thymonucleic acid’ as a carrier of hereditary information in bacteria (3–5). The section is completed by Erwin Chargaff’s important paper on the chemical composition of DNA (6). Chargaff gave detailed information about the base-composition of nucleic acids from different species, and pointed out that the base-composition of DNA – though not RNA – is species-specific. He suggested that the vast number of possible polymers of DNA would fit it to be the agent concerned with the transmission of inherited properties. The information in this paper was one of the cornerstones of the subsequent development of our understanding of the structure and function of DNA. The final article on nucleic acids is a review by J.A.V. Butler (7) on the effects of ultraviolet light on DNA – something that is perhaps even more topical today.

The third section includes topics ranging from chemistry to behavioural studies. Several of these papers are ‘surveys’ – the long reviews which were an important feature of the journal, especially in the early years when scientific communication was being re-established after the Second World War. We begin with an elucidation of the ‘Embden-Meyerhof’ glycolytic pathway by O. Meyerhof himself (8). This is followed by the pioneering paper by D.H.R. Barton (9) on the conformation of the steroid nucleus, and a survey by L. Ruzicka (10) on the isoprene rule and the biogenesis of terpenes. The next papers are more biological; a lengthy

review by K.von Frisch (11) in which he explains in detail his discovery of the language of bees, and suggests practical applications for agriculture, and C.L. Duddington’s description of how fungi can be predators – with nematodes as their prey. This last is an example of the kind of article EXPERIENTIA has always valued; something of interest to scientists from many fields and specialities, and written in a language that the non-specialist can understand (12). The section is concluded by a contribution by C. Regel pointing to the occurrence of climatic change – a warning bell that was probably overheard at the time(13).

The last three papers are short communications that triggered research in new areas. In 1962, F. Ritossa (14) described ‘A new puffing pattern induced by temperature shock’ in the polytene chromosomes of *Drosophila*. This is the first publication on what later became known as heat shock proteins (hsp), and was an important development in the understanding of regulatory signals in cellular metabolism. The abstract of a presentation at the 1976 meeting of the Union of the Swiss Societies for Experimental Biology (USSEB) by J.F. Borel, A. Rüegger and H. Stähelin (15), is the very first publication on the antilymphocytic action of cyclosporin A – the immunosuppressant found in two fungus species – a drug which later became an essential part of organ transplant surgery.

Papers on methodology are not spectacular, but nevertheless often play a key role in the development of research. EXPERIENTIA has always published such papers – for many years in a special section called ‘Pro Experimentis’. The last facsimile (16) is of a short communication by R. Stämpfli in the field of electrophysiology: a description of the ‘sucrose gap’ method for measuring action potentials in short stretches of nerve and muscle fibres. This paper became a ‘citation classic’, and had been cited at least 290 times by the end of 1987 (Current Contents Life Sciences, 31, 1988, p. 9).

The facsimile section begins with the cover of Volume 1, No. 1, published in April 1945 – the birth of a new journal publishing papers on ‘The whole area of the Natural Sciences’ in four languages.

For contents of the facsimile section see next page.

Contents of the facsimile section

- 1 Mislin, H., Das Elektrovenogramm (Evg) der isolierten Flughautvene (Chiroptera). *Experientia* 4 (1948), 28 (see page 357).
- 2 Mislin, H., Active contractility of the lymphangion and coordination of lymphangion chains. *Experientia* 32 (1976) 820–822 (see page 358).
- 3 Boivin, A., Delaunay, A., Vendrely, R., et Lehoul, Y., L'acide thymonucléique polymérisé, principe paraissant susceptible de déterminer la spécificité sérologique et l'équipement enzymatique des bactéries. Signification pour la biochimie de l'hérédité. *Experientia* 1 (1945) 334–335 (see page 361).
- 4 Boivin, A., Delaunay, A., Vendrely, R., et Lehoul, Y., Sur certaines conditions de la transformation du type antigénique et de l'équipement enzymatique d'un colibacille, sous l'effet d'un principe inducteur de nature thymonucléique issu d'un autre colibacille (mutation "dirigée"). *Experientia* 2 (1946) 139–140 (see page 363).
- 5 Boivin, A., et Vendrely, R., Sur le rôle possible des deux acides nucléiques dans la cellule vivante. *Experientia* 3 (1947) 32–34 (see page 365).
- 6 Chargaff, E., Chemical specificity of nucleic acids and mechanism of their enzymatic degradation. *Experientia* 6 (1950) 201–209 (see page 368).
- 7 Butler, J.A.V., Effects of ultraviolet light on nucleic acid and nucleoproteins and other biological systems. *Experientia* 11 (1955) 289–293 (see page 377).
- 8 Meyerhof, O., New investigations on enzymatic glycolysis and phosphorylation. *Experientia* 4 (1948) 169–176 (see page 382).
- 9 Barton, D.H.R., The conformation of the steroid nucleus. *Experientia* 6 (1950) 316–320 (see page 390).
- 10 Ruzicka, L., The isoprene rule and the biogenesis of terpenic compounds. *Experientia* 9 (1953) 357–367 (see page 395).
- 11 Frisch, K. von, Die "Sprache" der Bienen und ihre Nutzenanwendung in der Landwirtschaft. *Experientia* 2 (1946) 397–404 (see page 406).
- 12 Duddington, C.L., Predacious fungi and nematodes. *Experientia* 18 (1962) 537–543 (see page 414).
- 13 Regel, C., Zur Klimaänderung der Gegenwart. *Experientia* 8 (1952) 34–35 (see page 421).
- 14 Ritossa, F., A new puffing pattern induced by temperature shock and DNP in *Drosophila*. *Experientia* 18 (1962) 571–573 (see page 423).
- 15 Borel, J.F., Rüegger, A., and Stähelin, H., Cyclosporin A: A new antilymphocytic agent (Abstract). *Experientia* 32 (1976) 777 (see page 426).
- 16 Stämpfli, R., A new method for measuring membrane potentials with external electrodes. *Experientia* 10 (1954) 508–509 (see page 427).