

The Years in Mainz – I

Hans Mislin and his institute

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Hans Mislin was appointed to the Professorship of Zoology and General Biology and became Director of the Zoological Institute in Mainz in 1954. He succeeded a man whose years in office spanned an era during which advances in particular fields of science were closely associated with the work of individuals. Freiherr v. Buddenbrock represented comparative physiology in Germany. One might even say that, within the German framework, he established physiology in the field of zoology. This was achieved by untiring questioning about functions, and by diligent and keen experimenting. The achievement was also brought about by training and educating large numbers of biologists who later carried on his ideas and helped to develop a school of comparative physiology in Germany. The question of function was applied to every single corner of zoological territory. Anything and everything that seemed appropriate for research was investigated, and text books and guides for practical exercises in comparative physiology were written. The crowning glory of v. Buddenbrock's work is his six-volume work on comparative physiology, the first edition of which was published in 1950 by the Birkhäuser publishing house.

Hans Mislin, who possessed a very general biological-physiological knowledge, based on philosophical thought, did not find it easy to fit into the situation in Mainz. All the researchers who had influenced his physiological ideas were physiologists with a medical orientation. As a result, when Mislin became Professor, studies in the Zoological Institute in Mainz were given a new direction, and the physiology of vertebrates was given more prominence. Investigations into the automatism of the heart and the creation of electrical activity in contractile vessels, and pharmacological as well as electrophysiological studies on the central nervous system of lower vertebrates, all showed that physiology as practised in Mainz was taking a new course, in terms of both methods and content.

Comparative physiology was still presented as a central theme in the curriculum, but it was clear that the great problems of general physiology were gaining increasing significance. There was a danger that this change could

lead to far-reaching misunderstandings, if the circumstances were only given superficial attention. This was due not least to the fact that the necessary effort to establish methodologies for research, and to present these methods in lectures and practical classes, pushed aside the faunistic aspects of the teaching, at least in the classical form, and left them on the sidelines of the sessions.

Although the courses already established in Mainz continued – for example the major zoological practical exercise, the classes on identification and classification, and the faunistic excursions – the introduction of new courses made it clear that a change in emphasis had taken place. There were practical exercises in physiology both in basic and advanced courses, and a practical course in electrophysiology. There was a zoological course for medical students, which was not obligatory but was very well attended: the lecture theatre, converted into a course room, was completely full.

One of the most essential innovations in Mislin's first years was the experimental lecture. These courses made use of the video technology then being newly developed to transmit laboratory experiments onto screens in the lecture theatre. As far as we know, this use of video-aided technology in lectures was a real innovation at the time. As all of these experiments – for example on surviving amphibian hearts, nerve-muscle preparations, guinea-pig intestines and bat veins, and many others – were broadcast live, the sessions were real marathons for us, the assistants, as there was no means to store any data. In addition the equipment was prohibitively expensive. Nevertheless, the assistants profited in a special way, developing an invaluable creativity and strict discipline that had an effect on all areas of activity in the institute.

A most significant achievement of those days was the establishment of a precision instrument workshop, with all the necessary material equipment and personnel. This workshop is now a central element in the faculty of biology. Only a few people will remember that it was Hans Mislin who founded it. Its establishment was the expression of a new era of experimental research and teaching in Mainz.

It is not clear whether it was the proximity of medically orientated researchers and their methods, or rather the recognition that normal functional processes in organs and organ systems are most easily understood if approached from outside, that made Hans Mislin accord comparative pharmacology great significance. Even today, a student of zoology in Mainz will find a seminar in the curriculum, held by the honorary professor Dr. Horst Kreiskott, entitled 'Comparative pharmacology and application techniques of pharmacological research'. Mislin had already given Dr. Kreiskott a teaching assignment with this content in the sixties.

Another factor must be mentioned here that soon proved to be of great importance, indeed indispensable, for research. The thrust of the pharmacological work undertaken, still with a comparative approach, led to the development of a good, active and creative relationship between the university and the pharmaceutical industry. The result of this was that the modest means at the institute's disposal, as far as research funds were concerned, were replenished from industry, thus creating more optimism and making long-term planning possible. The drawback, of course, was that the sponsors often tended to dictate the course that research was to take. But there was always some benefit that furthered individual creativity. This 'research under contract' sponsored by third parties has now become the most important source of support of university research.

The industrial managers were not only interested in professional services but also showed enthusiasm for research fields that had hitherto only been given scant attention. The following statement made by a publisher is an excellent example of how Hans Mislin recognised the applied side of comparative physiology and pharmacology very early on, and performed the corresponding work.

In the preface to a publication in *Heart and Circulation* 'On the functional organisation of the vasomotoric lymph drainage' dated 1974 it says: 'The field of morphology and especially the function of the lymph system, that has been rather overlooked in clinics and research up to now, is gradually gaining currency. The head of the team is therefore handing over to an author who has tried to build bridges to new clinical investigations and treatment possibilities of the lymph vessel systems, or their disorders, by his investigations on the dynamics of the lymph vessel systems of various species'. This author was Hans Mislin¹.

Hans Mislin's work was not confined to the laboratory. For example, he loved the sea, and he linked this affection to two didactic goals very soon after his arrival in Mainz. Firstly, he considered marine biology with all its potential to be an essential component of a biologist's training. Secondly, after the Second World War, the Germans had to work hard to restore their image in

the rest of Europe, particularly in France. Who could be better fitted to undertake this than the students of the new generation? They were affected to a certain extent by being Germans, but they could represent the new democracy without prejudice. And France had many marine biology stations to offer that were appropriate to fulfil the aims both of scientific education and better international understanding.

Mislin organised excursions to Villefrance sur Mer, to Sète, to Banyuls and finally to the marine biological station in Arcachon where, in the course of the years, a very friendly and intensive relationship developed between the Germans and the staff of the station. Even today this friendship is upheld by Mislin's students. The station provided accommodation, board and scientific supervision, and a well-equipped course room provided the opportunity to work on cross-sections of the fauna of the Bay of Arcachon, obtained with the research station's own boat. Even simple physiological experiments and behavioural observation of marine animals were possible.

We said at the beginning that Mislin's knowledge and intellectual abilities were based on philosophical foundations. These he had established as a student in Basel, Vienna, Prague and Königsberg. His close friendship with Leopold Ziegler was an expression of his philosophical approach to the world, and so was his long term of chairmanship of the Kayserling-Society in Wiesbaden. Basically, Mislin was a philosopher. It is therefore not surprising that he was one of the founder members of the scientific-philosophical colloquium, a meeting that is still very popular today among professors and students.

In Hans Mislin's time in Mainz we were already familiar with environmental problems. The biologists used the term 'ecology', which is as old as scientific biology, for the study of the interrelationships of organisms and their environment. But only a few people in the sixties had begun to perceive the whole significance of the effects and cross-relationships stemming from man's interference in nature. Hans Mislin was one of these few.

In 1964 he founded the 'environment colloquium', to which representatives of science and industry, including the chemical industry, were invited. The idea was for them to discuss their views on topical problems in front of a group of students: for example the application of pesticides in agriculture or the use of fertilizers to increase yields. It must not be overlooked, however, that hardly any of the participants in this colloquium were aware of the future significance of these problems.

Mislin lived in a suburb of Mainz that was one of the most pleasant residential areas of the town, adjacent to the protected area, Mainzer Sand, as well as to a large forest area, popular as a local resort. A further example of Mislin's ecological consciousness was the occasion

when he distributed sacks to his students and invited them to join in a walk through the Forest of Gonsenheim in order to pick up the litter that, even at that time, was there in abundance. The interesting point about this is that only a few days later, a respected biologist approached me about this event. Although I had not been informed about this project in advance, my attitude was neutral if not rather positive. However, this gentleman indicated to me that he considered Mislin's action symptomatic of a mental defect. The significance of the symptoms was only clarified later. Mislin was ahead of his time, but only a few people were in a position to understand and appreciate the fact.

Hans Mislin did not make it easy for people to believe in him. His spontaneity, his ingenuous, volatile nature and his occasionally effervescent temperament often caused some disruption in his vicinity. This was explained by a colleague from Basel on the occasion of Mislin's 80th birthday: Hans was an intellectual arsonist.

Some deeper glances into his soul were necessary to recognise the quality and he certainly was not a Prussian. Behind an exterior that was often rather rough he hid a very deeply felt humanitarianism that we, his assistants, were often able to experience. The atmosphere at the Institute for Physiological Zoology in

Mainz was personal. We played football together, and the weekly tea-session including all the staff – not too large a number – fulfilled the same function for us as the Works Council today. If someone needed a day off – for an important or trivial reason – he or she seldom got round to explaining why, as the 'boss' had already agreed and was again engrossed in some scientific matter.

All the staff of the Institute for Physiological Zoology in Mainz during this period agree: Hans Mislin was a good 'boss'. Yet he was no real boss at all: many students and colleagues would have been prepared to make sacrifices for him.

A last remark in this context: at that time, the numbers of students were sometimes considerable. This led to a great run on the practical exercises associated with foundation courses. However, Hans Mislin used neither lotteries, entrance tests, nor capacity calculations to solve this problem. His solution was to pronounce a single sentence: 'Ladies and Gentlemen, in the coming summer term we will hold an additional physiology course – has anyone any more questions?.'

- 1 Mislin, H., Zur funktionellen Organisation der vasomotorischen Lymphdrainage. Herz-Kreislauf; Z. f. Kardiologie und Angiologie in Klinik und Praxis 6 (1974) 566–574.

