

# Twenty Years of Czechoslovak Parasitology

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The twentieth anniversary of our liberation in May 1945 seems a suitable opportunity to review the development of Czechoslovak parasitology in the past and to compare it with that which was obtained between the two World Wars (from 1918—1938). In these years only two institutions were concerned with parasitology, the Parasitological Institute of the Veterinary School at Brno (est. in 1920) and the Parasitological Laboratory (1928) of the Institute of Public Health. The head of the Parasitological Institute, prof. Sekera, a specialist in Planariidae and later prof. Hykeš, a physiologist and general biologist and also Dr J. Gabriel who was in charge of the Parasitological Laboratory at the Institute of Public Health were no parasitologists by profession. The first parasitologist was V. Breindl (1890—1948) professor of the Charles University in Prague, whose scientific activities were devoted solely to the studies of parasitic protozoa (malarial plasmodia, trypanosomes and trypanoplasmas of Czechoslovak fish, gregarines, sarcosporidia, anophelism a.o.). Over the period between the two World Wars, some Czechoslovak parasitologists achieved results of world fame. During his stay in the U.S.A. in 1923, Drbohlav (1893—1946) cultivated *Entamoeba histolytica* together with his American colleague Boeck. Later, after returning to Prague, he started work on problems of the epidemiology of malaria, leptospiroses, tularemia and rickettsial fever with regard to their distribution in Czechoslovakia. In 1923, prof. Lukeš (1885—1958) discovered *Leptospira canicola* as the vector of the Stuttgart disease in dogs. In the same year the first case of congenital toxoplasmosis was described in detail by prof. Janků (1886—1963). In the years 1938—1948 toxoplasma in hares was first recorded by Dr Rašín. Dr Dziuban repeatedly drew attention to the local occurrence of *Malaria tertiana* and *tropica*.

In this period general parasitological problems were studied by Hahn and Gabriel (gregarines of invertebrates), Kijenský (infusoria of Oligochaeta), Jírovec (Micro-, Myxo-Actinomyxidia, Haplosporidia, the kinetoplast in trypanosomes,

In applied human parasitology some case reports were published on the occurrence of *Entamoeba histolytica*, *Balantidium coli* and *Giardia intestinalis*, on echinococcal cysts and on cysticercosis. Research on veterinary parasitology was done by Klobouk (fasciolosis), Král (the relation of strongyloids to the Žďár disease of horses), Schäferna (fish parasites), Schönsfeld (parasites of bees) a.o.

During the Second World War no research work was done at the Charles University which was closed down by the Nazis for the duration of the war. Nonetheless some of our parasitologists continued in their work at their temporary working places. Thus the Parasitological Laboratory of the State Health Institute in Prague (Jírovec) started research work on leptospirosis and, in collaboration with some of our foremost gynecologists, carried out widespread investigations of vaginal trichomoniasis. In Bratislava, Dr Dziuban continued in his studies on malaria and also on intestinal parasites of man. A number of initiative contributions to parasitological questions were published by the workers of the prosector at Zlín. During this period the Parasitological department of the State Veterinary Institute was established in Bratislava concerned with the control of parasitoses of domestic animals, mainly fasciolosis and hypodermatosis.

After the liberation of our country in 1945, a great development started in human, veterinary and general parasitology. In 1946 an independent Department of Parasitology was established at the Faculty of Natural Sciences of the Charles University in Prague which soon became the center of Czechoslovak human parasitology. From there new diagnostical and therapeutical were introduced to the medical practise; biologists-parasitologists were trained in postgraduate courses and are now in leading positions at the institutes of the Czechoslovak Academy of Sciences and of the Ministry of Health. The department also initiated the establishing of the Cathedra of parasitology and hydrobiology at the Faculty of Natural Sciences which today is responsible for the education of parasitologists-biologists. Scientific work was mostly concerned with problems of human parasitology and also with some theoretical problems, principally on parasitic protozoa and mosquitoes.

The increasing demands of medicine for parasitological diagnostics initiated the establishment of the Laboratory of clinical parasitology (1953) studying not only diagnostical methods but also new chemotherapeutics for use in human medicine.

A great contribution to the development of Czechoslovak parasitology was the foundation of the Institute of Parasitology of the Czechoslovak Academy of Sciences (1962) in which the former Parasitological Department of the Biological Institutes of the Czechoslovak Academy of Sciences (est. in 1950) fused with the Protozoological Laboratory of the Czechoslovak Academy of Sciences (est. in 1954). This Institute, consisting of the department of protozoology, experimental helminthology, arachnoentomology, the department for the research of natural foci of diseases, the veterinary group and the laboratory for histology and histochemistry is con-

3 cerned with questions of the biological basis of parasitism, the life cycle of parasitic worms, ecology, histology and the pathogenesis of important ecto- and endoparasites of vertebrates and also with the special structure and the dynamics of natural foci of diseases in cultivated landscapes. The department of protozoology is dealing with problems of the epidemiology and the pathogenesis of various protozoan diseases (Toxoplasmosis and pneumocystic pneumonia), with parasitic protozoa of fishes, with the ultrastructure of Cnidosporidia, a.o.

The Institute organized parasitological expeditions in- and outside Czechoslovakia, to Albania, Bulgaria, Yugoslavia and Cuba. At Košice the former Helminthological Laboratory of the Slovak Academy of Sciences, established in 1952 was, in 1955, changed into the Helminthological Institute of the Slovak Academy of Sciences, now installed in its own new building. The work of the Institute is concerned with all aspects of helminthological research, from the helminthofauna to biological, ecological, biochemical, histological, immunological and therapeutical studies. In Bratislava a large group of scientists of the Virological Institute of the Czechoslovak Academy of Sciences is studying the vectors of arboviroses. The Entomopathological Department of the Entomological Institute of the Czechoslovak Academy of Sciences is successfully developing its research on the biological control of insects and other arthropods and its studies on the parasites of these animals. In the Parasitological Laboratory (1928) of the Institute of epidemiology and microbiology in Prague, belonging to the Ministry of Health, problems of leptospirosis, toxoplasmosis, rickettsioses, tick-encephalitis and also of diseases with a natural focus are being studied. In future, this Laboratory will become the organisatory and methodical center for all parasitological laboratories of the regional and district stations for hygiene and epidemiology. To date there are eleven of these laboratories in Czechoslovakia, of which the more important are in Praha-City, Praha-Central Bohemian district, Jihlava, Budějovice, Ostrava, Gottwaldov and Košice. In Slovakia the Parasitological Laboratory (1945) of the Institute of epidemiology and microbiology is now, after erradicating malaria, concerned with intestinal parasites of man. For the diagnostics and prevention of phytohelminthoses agricultural institutes (UKSUP) were established under the Ministry of Agriculture.

In 1964 the Cathedra of tropical and subtropical diseases of the Charles University in Prague started postgraduate courses for the training of physicians sent out to the tropics. Independent parasitological laboratories for training students in parasitology and parasitological research are only at the faculties of medicine of the universities in Bratislava, Hradec Králové and Olomouc, administered by the Cathedra of general biology or microbiology. Lately, new parasitological institutions were established at the faculties of natural sciences in Brno and Bratislava.

At the cathedras of parasitology and invasive diseases of the Veterinary faculties in Brno (since 1950) and Košice (since 1949) intensive work is done on the research of fish parasites and lung nematodes (Brno) and on helminthoses of production animals (Košice). Parasitological laboratories were also established at the State

Since 1945 the situation in parasitology has greatly improved especially in comparison with the year 1938. The numbers of scientists and technical assistants working in parasitology, are also much higher. While in 1938 only six parasitologists were actively concerned with parasitological research, today their numbers have increased twenty times (see the 1st Working conference of Czechoslovak helminthologists at Liblice in 1956 and the 1st Congress of Czechoslovak parasitologists in Prague in 1957).

Very important for the development of parasitology in Czechoslovakia was the foundation of the Czechoslovak Parasitological Society in 1959, a scientific society affiliated to the Czechoslovak Academy of Sciences. Of the 124 members of this Society three fifth are natural scientist, one fifth physicians and one fifth veterinarians. The Society calls several meetings a year, discussing current problems in parasitology. Sometimes guests from abroad lecture on recent result in parasitological research. Four meetings of this Society were devoted to problems of human parasitology (Toxoplasmosis — Jan. 1960 in Prague; "Parasitoses in children's communities" — Feb. 1961 in Prague; "Current problems of human parasitology in Czechoslovakia" — March 1963 in Bratislava; "Parasitology at the regional and district stations of hygiene and epidemiology" — March 1964 in Ostrava). One meeting of the Society was dedicated to veterinary parasitology ("Parasitoses of game" — June, 1960 in Prague). The Society also participated on three symposia organised by the Institute of Parasitology of the Czechoslovak Academy of Sciences in Prague ("Parasitoses on pastures" — Nov. 1960, Praha; "Parasitic worms and aquatic conditions" — Nov. 1962, Praha; "Theoretical questions of natural foci of diseases" — Nov. 1963), on two symposia organised by the Slovak Academy of Sciences ("Current problems of helminthological research in agriculture" — March 1961, Tatranská Lomnice; "Anthropozoohelminthoses" — Oct. 1961, Tatranská Lomnice); further on the "Symposium on disinsection" — Nov. 1961, Praha and on the "1st International Conference on Protozoology", August 1961 in Prague.

Some of the Czechoslovak parasitologists participate on meetings of the Helminthological Society in Moscow, on meetings of the Polskie Towarzystwo Parazytolodzkie at Gdańsk, Warszawa, Lublin, Olśnica and Poznań, of the German Parasitological Society in Berlin and Dresden, on the meetings of Hungarian parasitologists in Budapest and of Chinese parasitologists in Shanghai and on international congresses in Rio de Janeiro (1963) and Rome (1964).

The Czechoslovak Parasitological Society initiated the work on a bibliography of Czechoslovak parasitological literature up to 1961; the work was compiled by prof. Fendrych and will be published in 1965. Twice a year the Society publishes News, informing its members on all events concerning parasitology.

During the last 20 years much work has been accomplished in Czechoslovak parasitology. Our human parasitology concentrated on socially important parasi-

5 toses infecting thousands of people such as trichomoniasis, toxoplasmosis, oxyuriiasis, ascariasis, or on parasitoses endangering human life (pneumocystosis, some leptospiroses, rickettsioses, trichinellosis). Attention was payed to the importance of parasitoses in close communities — pneumocystosis in baby clinics, infections with *Giardia*, *Chilomastix* and *Hymenolepis* in children's homes.

Although veterinary parasitological research could base on the general knowledge that parasitoses cause great damage to production animals, little was known on the parasites occurring in our country. Therefore, studies on the parasites of wild and domestic animals had to be initiated in the various regions of our country. Gradually, surveys were completed on the parasitofauna of small and big domestic animals, of carnivores, rodents, ungulates, terrestrial and water birds, reptiles, amphibians and fishes. The work was based on the experiences of academician Skrjabin and his school. After accomplishing these studies research studies were made on the pathogenesis of some parasitoses, on the life history of helminths, the search for effective preventive and therapeutic measures (chemoprophylaxis, control of vectors and the care of pastures). A survey of the damage caused by parasitoses to our economy was also elaborated.

An important chapter in Czechoslovak parasitology is the research on natural foci of diseases, especially of tick-borne encephalitis, tularemia, leptospirosis a.o. It was proved that natural foci, in the sense of the theory of academician Pavlovsky, are in existence also in regions cultivated by man for many centuries. In collaboration with various specialists, extensive knowledge was gained not only on the bionomics of the vector of infections (mosquitoes, ticks, mites, fleas etc.) but also of the intermediate hosts and reservoirs, concerning especially small mammals and some groups of birds.

The research of insecticides, although not too successful in finding new means, initiated their production and application. Thus malaria, which used to be endemic in eastern Slovakia, was completely eliminated and the control of ectoparasites attacking man, production animals and birds became also very effective. The studies of the parasites of arthropods (protozoa, worms, arthropods, bacteria, viruses, fungi) are very promising in such instances where no common insecticides can be used or where the insects have become resistant.

Czechoslovak parasitologists also contributed to the taxonomy of some groups of parasites such as Cnidosporidia, parasitic Flagellata and Ciliata from various invertebrate and vertebrate hosts; in helminthology the systematics of many groups of parasitic worms were elaborated in detail; numerous studies on the life history of these worms and monographs on fleas, mosquitoes, some groups of helminths and arthropods were published. The parasites of fish were studied in detail. Theoretical studies were completed on artificial parasitism. Some easily breedable protozoa were used for model experiments investigating the effect of antibiotics, disinfectants, alkaloids etc. on the living cell. The latest studies are concerned with the ultrastructure of some protozoa (*Trichomonas*, *Toxoplasma*, *M-organism*, *Sarcocystis*, *Micro-* and *Myxosporidia* a.o.). The results achieved were

greatly appreciated at home and abroad. In the research on the physiology of 6 parasites little work has been done so far.

In the last 20 years textbooks were published on parasitology for physicians and veterinarians together with many works informing specialists and the public in general on parasitological problems. Hundreds of lectures were delivered by our parasitologists at home and abroad. The introduction of parasitological diagnostic methods to human and veterinary medicine greatly contributed to the therapy of parasitic diseases and to their control.

State prizes were awarded for discovering the parasite *Pneumocystis carinii* as the originator of human interstitial pneumoniae (Jírovec—Vaněk, 1953); for disclosing the laws governing the occurrence and distribution of possible disease vectors (Rosický, 1954) and for a collection of entomopathological papers (Weiser, 1964). The workers of the Biological Institutes of the Czechoslovak Academy of Sciences and of the Virological Institute of the Czechoslovak Academy of Sciences were awarded with honours for excellent work in acarology and helminthology in 1958.

The publishing platform for Czechoslovak parasitologists is the annual *Československá parazitologie* (since 1954). So far 11 volumes were published containing original papers by Czechoslovak and foreign parasitologists. In Slovakia the international journal *Helminthologia* has been published since 1959. Proceedings from symposia and conferences are published in special editions: "The epidemic of encephalitis in the Rožňava natural focus of diseases" (Epidemie encefalitidy v Rožňavském prirodním ohnisku nákaz), (SAV, 1954); "Natural foci of diseases" (Prirodne ohniska nákaz) (SAV, 1956), "Helmintologie" (SAV, 1957), "Antropozoonosy" (SZN, 1958), "Some natural focus infections in eastern Slovakia" (Niektore prirodno-ohniskové nákazy na východnom Slovensku) (Košice, 1962), "Antropozoonosy" (Bratislava, 1962), "Biology of viruses of the tick-borne encephalitis complex" (NČSAV 1960), "Progress in Protozoology" (NČSAV 1963), "Parasitic Worms and Aquatic Conditions" (NČSAV 1964), "Theoretical questions of natural foci of diseases" (NČSAV 1965).

Original parasitological paper are also published in other Czechoslovak and foreign journals such as *Věst. čs. zool. spol.*, *Zoologické listy*, *Biológia*, *Čas. lék. českých*, *Praktický lekař*, *Čs. epidemiologie*, *Čs. hygiena*, *Sborník vysoké školy zemědělské v Brně*, *Veterinární medicina*, *Sborník ČSAV*, *Veterinářství*, *Studia helminthologica*, *Sborník SAV*, *Folia veterinaria*, *Sborník Vet. fak. VŠP v Košicích* a.o.; abroad our papers are published in *Angewandte Parasitologie*, *Wiadomości parazytologiczne*, *Acta parasitologica polonica* a.o.

Today the best of conditions assure the further successful development of Czechoslovak parasitology. The laboratories are well equipped; there are enough research officers and technical staff to cope with any theoretical or practical problems. The results achieved in our research are universally acknowledged as an invaluable contribution to parasitology. Withal we may be proud of the good name of our parasitology in the world and it will be up to us to maintain it in future.