Ferdinand von Arlt and Ernst Fuchs*  
**Two Representatives of the Vienna School of Ophthalmology**

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The second half of the 19th century and the beginning of the 20th were times of splendour and fame for the medical faculty of the University of Vienna. Many of its professors (Billroth, Brücke, Freund, Hebra, Hyrtl, Lorentz, Nothnagel, Politzer, Rokitansky, Schauta, Skoda, Wertheim and others) became world famous. This was no accident but was the result of the way in which the members of the medical faculty were chosen and the high standard that was deliberately kept up. The most important quality of a professor in Vienna was always considered to be his ability to do original research work. He had to be a pioneer in his branch of medical science, besides fulfilling the requirements necessary for a good teacher. He had to master his speciality in all its branches and ramifications, including laboratory techniques and accessory sciences. He had to be the expert, and it was expected of him to have absorbed all that was said and written in the past, and to keep himself informed about current research work done in the laboratories, clinics and hospitals throughout the world. He had to be a good speaker and to be able to lecture freely, without the help of a manuscript. Finally, only those outstanding individuals were chosen, teachers who inspired the students not only through their teaching, but by their devotion to duty and their exemplary way of living. Nothnagel, in his inaugural lecture as professor of medicine in 1882 said these words: 'Knowledge gets its ethical value and its true significance only through the spirit in which it is used. Only a good man can be a good doctor.' In the choice

* A paper presented at the South African Medical Congress, Durban, September 1957.
of professors, national considerations were regarded as of secondary
importance. If no suitable candidate for a vacant chair could
be found in Vienna, a man from another Austrian province or
another country was chosen. Professors in Vienna came from
Germany, Switzerland, Holland, Italy. It hardly ever happened
that a call from the Vienna University was refused. To become a
member of this illustrious collegium academicum in Vienna was
regarded as such an honour that anyone was proud to belong to it.
Arlt and Fuchs might be regarded as typical representatives of the
Vienna medical school of this period.

FERDINAND VON ARLT

Arlt, born in 1812, son of a poor blacksmith in a small village in
northern Bohemia, suffered many hardships during his youth. In
his autobiography he tells of the hard work he was put to as a
child, of the poor food and the severe cold he suffered during the
winter months. During his grammar-school days he lived in the
house of his father's half-brothers, whose wife ill-treated him like
the proverbial stepmother. His high-school days, in the small
town of Leitmeritz, were not much better. He froze and he starved,
and he succeeded in keeping body and soul together only with the
help of meals to which he was invited by charitable people, and
by helping younger pupils in their studies for a small fee.

His family wanted him to become a clergyman, but he decided
in favour of medicine and studied at Prague, still without
hardship. After he qualified he became assistant (1840) and later
successor (1847) to Johann Nepomuk Fischer, the professor of
ophthalmology there. Ten years later (1856) he was called to
Vienna, where for 27 years he occupied the chair of ophthalmology
treating thousands of patients, operating, teaching and writing.
In 1883 he retired from the clinic and in 1887 he died.

Arlt's fame as a scientist rested originally on his text-book,
which appeared in 3 volumes between 1851 and 1856. Though
more than a hundred years have passed since its first
appearance and many changes have occurred in the concep-
tion of eye diseases and their treatment, it can be read with
interest even today. For the first time clinical facts were
strictly correlated with anatomical and physiological prin-
ciples. What impresses one most are the numerous case
histories which illustrate nearly all the diseases described.
They bear witness to Arlt's excellent power of observa-
tion and his ability to describe what he had observed in clear,
simple language. The main weight of the book rests on the
presentation of the external eye diseases. The ophthal-
moscope had just been invented (Helmholtz, 1851) and many
findings made with its help could not then be properly
interpreted.

Of Arlt's discoveries only two will be mentioned here: He was the first to show that in higher
degrees of myopia the posterior segment of the eyeball was dilated
and extended, while the front part was not altered in shape; and
he explained correctly the nature of staphyloma as scar tissue
formed from the prolapsed iris. He was the first to state in clear
words that sight-testing and the determination of the refraction
of the eye belongs to the ophthalmologist.

When O. Becker wrote in Arlt's obituary that, in a sense, all the
ophthalmologists then living were his pupils, he referred to his
Ophthalmic Surgery, which appeared in 1874, as a chapter in
Graefe-Saemisch's Handbuch of Ophthalmology. This made him
famous throughout the world. For over 20 years most ophthal-
mologists, wherever they lived, studied it. The historian Hirsch-
berg writes: 'Every one of us, whose duty it was to perform opera-
tions on the eye, studied this work with great diligence and con-
sulted it again in every difficult case.' Every line in it is based on
the personal experience of the author, collected during 25 years
of intensive work. At that time it was the best book on ophthalmol-
y and it remained so for many years.

Fuchs gave a graphic description of Arlt as an operator. Cocaine
was unknown and general anaesthesia was not used in
Vienna for eye operations. In cataact operations the incision
caused little pain but the iris, being very sensitive, could usually
not be brought back to the right position and results without
adhesions or prolapse were a rarity. At that time nothing was
known about asepsis. Arlt advised putting Daviel's spoon into the
mouth to moisten it with saliva before introducing it into the eye.
The instruments were washed after each operation, not before. The
post-operative treatment was cruel; for 6 days the patient had to lie
motionless on his back. Men had often to be catheterised, and the
pain and the pressing when trying to pass water often led to bursting
of the wound, which of course was not stitched in those days.
Hypostatic pneumonia was common, and so was sudden death
from pulmonary embolism due to thromboses in the veins of the
legs.

Arlt looked like a schoolmaster, and he was indeed an excellent
teacher. He sat on a little three-legged stool, surrounded by his
pupils. Every case was examined by one of them and was after-
wards discussed. Arlt himself writes that he never saw the cases
beforehand, and that his diagnosis was based on the observations
he made while the student was examining young doctors, who
operated; he assisted them himself; he did not criticize or interrupt
them during the operation but after its conclusion discussed their
mistakes and the way to avoid them. The teaching of
certain branches of ophthalmology, such as ophthalmoscopy,
perimetry and refraction, was delegated to certain assistants who
gave special courses on these subjects—a practice continued in
Vienna up to the present day.

Arlt's private practice in Vienna was enormous and we have a
good description of it from the pen of Dr. Hans Adler, who for
some time was his private assistant. No fee was asked for; every-
body gave what he wanted, many nothing at all, even for treat-
ments lasting for weeks and months. His guiding principle was:
'Primum humanitas, alterum scientia'. In his autobiography he
enlarges upon this: 'The real disciples of our art', he writes,
'should not bother about income; this arrives in the course of their
activities by itself. Their aim should be to help through scientific
and ability and where these prove insufficient, through compassion
and pity for the lot of the sufferer'.

This life, entirely devoted to healing, learning, teaching and
research, was not to end without great suffering. Though he was
well off, he lived parsimoniously; he did not possess a carriage of
his own, but used the horse-drawn tram which were the main
means of communication in Vienna at that time. Jumping off from
the running car, he once fell and broke his left arm close to
the shoulder. Thrombosis in his left foot supervened, causing
severe pain, which did not leave him until his death nearly 9
months later. He suffered amputation of his foot, and of the
fibula, amputation of the thigh, and finally resection of the
lower leg.

Ernst Fuchs

The Fuchs family also came from Bohemia. They had been peasants
in the Bohemian Forest, but Ernst Fuchs' grandfather migrated
to Vienna and settled there. Ernst's father, a professor in a high-
school in Vienna, though not well off, was able to give him an
excellent education. As a result of this difference in early education,
while Arlt, in spite of his achievements, remained in certain
respects restricted in his general outlook, Fuchs had many varied
interests and hobbies. He was typically Viennese. He spoke
German, French, English and Italian equally well. He was a
great reader, and fond of classical art; he loved walking, cycling
and mountaineering, and became one of the greatest travellers of
his time. Extracts from his travel diaries have been published by
his sons. He was asked to lecture in many countries, and his
pupils all over the world often called him in for consultations and
operations. He visited nearly all the European countries, Asia
Minor, Ceylon, Thailand, Java, China and Japan. With Robert
Koch he travelled in Central Africa, and on another occasion he
was invited to organize an eye clinic in Addis Ababa. Lecture tours took him through a great part of the American continent, both north and south.

Fuchs' parents lived in a four-roomed flat in one of those gloomy middle-class apartment houses of Vienna. He went to a gymnasium which had been founded by clergymen from Scotland, one of the best in Vienna. The main subjects of instruction were Latin and Greek. Pupils were expected to work hard, and Fuchs recalls how for many months he started at 4 a.m. In 1868 he entered the medical faculty of the Vienna University. His teachers included Hyrtl, Brücke, Rokitansky, Hebra, Billroth and Arlt. While still a student he showed his ability for research in the physiological institutes both in Vienna and in Innsbruck. In 1874 he took his degree in Vienna. Arlt advised him to get a working knowledge of general surgery, before devoting himself to ophthalmology, and consequently he worked for 2 years under Billroth, during which time antisepsis was introduced and Lister himself visited Vienna. From 1876 to 1881 Fuchs was assistant at Arlt's clinic, which laid the basis of his encyclopaedic knowledge of everything pertaining to ophthalmology. During this period he wrote his first large scientific work, about sarcoma of the uvea—a masterly treatise which should be studied by everybody who wants to do research work in the ophthalmological field.

This work, undertaken to qualify as a Dozent of the Vienna University, made Fuchs world-famous, and at the age of 30 he was called to the newly created chair of ophthalmology at the University of Liège. He stayed for 4 years and, amongst other scientific publications, he wrote another book which carried his name all over the world. This was a work on the prevention of blindness which, as shown by the table of contents, dealt with eye diseases on a hereditary basis, in childhood, in school age (dealing with the aetiology and prophylaxis of myopia, and as a result of general illness, and contagious eye diseases (particularly blennorhoea and trachoma). It then dealt with the influence of occupation, social environment including illumination, food and cleanliness, and climate. Finally it described the organization of treatment and prophylaxis.

This classic work paved the way for his return to Vienna in 1885, when he became professor there at the age of 34. For nearly 30 years, until 1914, when he retired voluntarily, he remained professor of ophthalmology in Vienna. His influence can hardly be over-estimated. He was generally regarded as the greatest ophthalmologist of his time, and patients came to see him from all over the world. He reformed the teaching in ophthalmology. Every one of his own lectures was a masterpiece, and his school included demonstrations and special courses by his assistants. Foreign doctors flocked to the Vienna clinic, and Fuchs himself gave courses for them in their own language, mostly in English. He had the final say in ophthalmological appointments in Austria and hardly anybody became a lecturer, a professor, or head of an eye hospital, who had not studied under him and had been recommended by him.

During all these activities, Fuchs continued with his scientific work. The number of his publications exceeds 250. Many eye conditions were described by him for the first time, some of which are the following: Blepharochalasis and ptosis myotropica of the lids; herpes iridis of the conjunctiva; episcleritis periodica fugax; heterochromia of the iris; the so-called 'Fuchs coloboma'; retinitis circinata; the black spot in the macula; gyrate atrophy of the choroid; detachment of the choroid after cataract extractions; the diffuse form of choroid sarcoma; and sympathetic ophthalmitis following a necrotic sarcoma in the other eye.

No publication, however, contributed so much to the fame of Fuchs as his textbook, first published in 1889. In the introduction he says he wrote this book because he resented it if students took notes during his lectures instead of paying attention to his words. He therefore wanted to provide them with a book where they could find the essence of what he had to tell them and to which they could refer later in life. This book has been called the bible of the ophthalmologist. It has been translated into many languages, amongst them into Chinese and Japanese. Twelve editions came from Fuchs own hand, and altogether 18 editions were published, the last in 1945, 46 years after the first edition and 15 years after Fuchs' death, which took place suddenly from coronary thrombosis at the age of nearly 80, shortly after his return from one of his journeys. His wish for a quick end had been granted.

SOUTH AFRICAN ORTHOPAEDEIC ASSOCIATION
CLINICAL MEETING, CORONATION HOSPITAL, JOHANNESBURG*

1. A Case of Resistant Rickets, presented by Dr. Levin, of Dr. Fakée's Paediatric Unit

The patient was a child aged 12 years with a history of deformities of the limbs since the age of 18 months. He commenced walking at 2½ years. It was not until he was 9 years old, however, that he was first seen at this hospital. On admission, the appearances were those of vitamin-resistant rickets. The child had frontal bossing, dental caries, enlargement of the epiphyses, and a raised alkaline phosphatase. The blood chemistry was otherwise normal. Later, the blood calcium was normal but the phosphatase was always low. He was put on calcium and shark oil without much effect.

He has bowing of the legs and is unable to walk without calipers, and then with difficulty. At the time of the present admission he was discharging inus of the right hip, and hortening, swelling and local pain. At operation a sequestrum consisting of practically the whole diaphysis of the femur was removed.

Mr. Lunz. Concurring, in that he considered the limbs sufficiently straight. He felt that attention should be directed to the physiological aspect of the problem.

Mr. Edelstein. This is a typical case of renal rickets, but not a R.R.D. in that in the latter case, there is no renal damage, but merely a failure to utilize vitamin D. This boy, has, however, renal damage, and these are usually hopeless cases. Which type of renal rickets is this he was asked, as such differentiation calls for a great deal of biochemical investigation. He would certainly not entertain the idea of osteotomy; this would be attacking the wrong end of the problem.

2. A Case of Acute Osteomyelitis of Infancy, presented by Dr. Morris, of the Orthopaedic Unit

The patient presented was admitted a year previously with a history of involvement of the femoral shaft in the infectious process. At operation a sequestrum consisting of practically the whole diaphysis of the femur was removed.

Mr. Morris asked how these cases should be treated primarily and how this particular case should be treated in the future.

* Held on 22 November 1957.