

EDITORIAL

KARL LANGER (1819-1887) AND HIS LINES

KARL LANGER was born in Vienna and but for a short spell in Prague spent his professional life there. At the time when we are particularly interested in him, he was Professor of Anatomy at Joseph's Academy in Vienna. But he was an anatomist who had wider horizons than mere descriptive morphology. During his student years, the famous physiologist Czermak had a great influence on him and many of his subsequent writings were concerned as much with function as with form. He wrote about the structure of joints, blood vessels and lymphatics but today he is remembered only for his "Lines" which were really a study of the functional anatomy of the skin.

Although the term "Langer's Lines" is known to every surgeon, not all know what they are. In a recent paper in *Plastic and Reconstructive Surgery* (Ksander *et al.*, 1977) they were defined as "the result of connecting the long axes of distortion of round holes punched in the skin . . .". This of course is nonsense but perhaps understandable since few today have seen or read Langer's original work. That in turn is also understandable since the reference in most textbooks and papers is wrong and has been copied from one to another for decades.

A search by the Librarians of the Royal College of Physicians and Surgeons of Glasgow finally unearthed Langer's paper which contains his original illustrations of the lines which have often been falsely redrawn and published in various textbooks of surgery. I was intrigued to see that the article appeared under the general heading "On the anatomy and physiology of the skin" and was numbered I. Were there more? The next issue of the same journal obtained from Vienna contained no less than 3. I have never seen them referred to but it is quite apparent from reading them that they are integral parts of a complete study of the directional variations of the structural properties of skin. Number II is entitled "The tension of the cutis", number III "The elasticity of the cutis" and number IV "The swelling capabilities of the cutis". The latter title indicates some of the difficulties involved in translating Langer into English. Not infrequently there are no exactly similar English words. "Quellungsvermögung" is literally "swelling capability" but in German "Quellung" differs from "Schwellung" which also means "swelling" by having implicit in its meaning the imbibition of fluid while swelling as *e.g.* a piece of slippery-elm bark would behave when immersed. Even the word "Spaltbarkeit" in the title of the first paper has no neat English equivalent. "Cleavability" sounds rather better than "splittability" and one eventually becomes accustomed to what is virtually a new English word.

Langer wrote in the classical scientific German of his time with long involved sentences and to make things more difficult it is not infrequent to find, when looking up an unfamiliar word, that the dictionary lists it as "(Austrian dialect)". The meaning of a few words seems to have been lost; perhaps they were local or anatomical jargon of the time. One example "vegetationsverhältnisse" was translated by one Austrian surgeon who speaks excellent English as "metabolic rate"; another Austrian surgeon equally competent in English insisted that it meant "climatic changes". Neither made sense in the context but the approximate if not the precise meaning was fairly clear.

In 1973 in Number 19 of *Clinical Orthopaedics and Related Research*, there was published what purported to be an English translation of Langer's first article. When I

checked it with the original article however there were many errors and inaccuracies and large sections were missing altogether. The missing sections were invariably those with a hard-to-translate word or a highly involved sentence and the translator had obviously no knowledge of the subject.

The version which follows is as accurate a translation as I, with the help of professional translators and friends in Germany and Austria, can hope to achieve. The translation is as literal as possible within the bounds of readable English.

Only the first quarter of paper No. I is being published. The remainder consists of a most detailed description of the cleavage lines. This is descriptive anatomy at its most boring. Considering that there are individual variations such detail is of no value to the plastic surgeon nor does it add much to what is so well illustrated in the figures. Papers II, III and IV, which it is hoped to published in the April, July and October issues, are much more concerned with the dynamic properties of skin and will be published in full.

I am grateful to Dr Hannelore Sieber, Dr Ulf Bauer and Dr Gerhart Fritz for their unstinted help.

T. GIBSON