

TO THE EDITOR:

The question has been asked, precisely what was Virchow's original description of the cells of the leproma to which his name is so commonly given. That description appeared in his treatise, *Die krankhaften Geschwulste (The Morbid Tumors)*, which was published in Berlin in 1864-1865 (Ed. 2, S. 497). If any translation of the pertinent passage has ever been published in the leprosy literature, we have not learned of it. It appears that the treatise itself was never translated into English, although a French edition, entitled *Pathologie des Tumeurs*, was made by one Dr. Paul Aronssohn and was published in 1869 (Paris, Germer Baillière, Libraire-Editeur, Rue de l'Ecole-de-Medecine, 17).

Introducing his description of the lesions as seen in the fresh state and otherwise, he described the low-magnification picture and went on to say:

Seen with high magnification the mass of new tissue is composed mainly of cells which present great variations in shape and size. It is doubtful if I have ever before seen, as well as here, the progressive development of connective tissue cells, first simply fusiform or stellate and going through the phase of nuclear and cellular division. The immediate products of cellular division appear here in a striking fashion. The more frequently the division is repeated, the smaller and more globular are the new cells. The old intercellular stroma becomes thinner and thinner, to the extent that between the cells, which are arranged in layers or groups, one can no longer clearly distinguish the narrow strands of interstitial tissue, which become granular and turbid when acetic acid is added. Often in this tissue only nuclei are seen; in preparing the specimen for examination the cells are greatly disrupted, so that the freed nuclei (cytoblasts) are seen in large numbers. . . .

With regard to the cells, I will again comment that when fully developed they consist of round structures, pale, slightly granular and delicate

(easily destroyed); they often have only a single nucleus which is very large and shows granules and nucleoli. In the fresh state I have been especially surprised with one peculiarity: this is the great tendency to form vacuoles, apparently filled with some kind of fluid, so that in certain circumstances they look like little bubbles. Their size varies greatly. Sometimes they are no larger than red blood corpuscles; the majority equal the size of ordinary lymphocytes; some look like large mucous epithelial cells.

Illustrating this description there are two figures. The first, a low-power drawing of a large section of the whole, or at least the greater part, of a cutaneous nodule, the other consisting of two drawings of details of the former, showing individual cells and their clustering in the "tumor." The latter bears the following description:

A. Isolated elements. The progressive development is represented left to right. On the left are connective tissue cells, very large; the majority are stellate, with one nucleus and one nucleoli. Next, division of nuclei (cells with two nuclei) and of the cells. Toward the right, some granular cells, more or less round, with one or more nuclei. B. A part of the tumor intact to show the arrangement in layers or clusters of granular cells.

Present-day readers will, of course, realize that Virchow wrote these descriptions a decade before the leprosy bacillus was discovered by Hansen, when the actual nature of the leproma was not known; that the "connective tissue cells" would now be ascribed to the reticuloendothelial system; and that what—with his preoccupation with neoplasms—Virchow took to be proliferation of the "tumor" cells was aggregation of macrophages (histiocytes) in different stages of development and modification. It is clear that he was dealing with a very active lesion, not an old, chronic, inactive one, else the smaller cells described (presumably monocytes) would not have been a part of the picture; and, on the other hand, the old foamy cells characteristic of such old lesions are not described or pictured. What are described, for the first time, are the cells containing what are now called globi.

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[NOTE: Since this letter was received, Dr. George L. Fite, of the National Institutes of Health in Washington, at the suggestion of Dr. Binford, has supplied a complete translation of Virchow's description of the leproma. That will appear, as a reprinted historical document, in an early issue.—EDITOR.]