

age at the beginning of the anesthesia was 2 hours and 39 minutes and at the close of the operation, 3 hours and 33 minutes.

The extreme youth of the patient was such that perhaps I may claim a world

record for the youngest patient who has been given an anesthetic agent.

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To the Editor:

With regard to Cullen's article, *Curare: Its Past and Present*, in the September 1947 *ANESTHESIOLOGY*, I should like to submit most respectively the points which are listed below as aspects of my endeavors with curare, which need published correction or explanation.

The points I should like to comment upon are few in number, but are the sort of thing which—in the face of other current and pending publications—might give rise to a degree of contention if they were left unadjusted:

(1) The several botanical specimens mentioned on page 484 were, in reality, a hard-won initial collection of 76 . . . some of them being new to science and still identified by my name and collection number. This collection, as it related to curare, has been of pioneering importance in the straightening out of curare's tangled ethnobotany and the establishment of the drug's collection in terms of modern pharmacognostic procedures. Its subsequent, first publication (Krukoff, B.A., and Smith, A. C.: Notes on the Botanical Components of Curare. II, *Bulletin of the Torrey Botanical Club*, 66: 305 (May) 1939) also established botanical raw material sources (including the plant *Chondodendron tomentosum* R. & P.) discovered by our expeditionary efforts in regions as far as 600 miles from where they had previously been observed. Among other "firsts" represented by this initial collection, we discovered several in the remote hinterland of Ecuador where they had not previously been known to flourish. Plants falling into this category occur in both the families Loganiaceae and Menispermaceae.

Since then—despite certain difficulties—this collection has been greatly augmented and extended . . . with specimens deposited not only in the herbaria referred to in the article but also in others, e.g., the Dudley Herbarium at Stanford University.

Among other aspects of this latter work has been an exhaustive study of various *Chondodendron* species (especially the *tomentosum*) from various widely scattered regions . . . with a nearly finished—and possibly definitive—correlation of the plant's alkaloidal content with the profoundly influencing factors or region, season, altitude, etc.

Inasmuch as this work has involved even wider scope than our original work, it is felt that it merits this brief description of it.

(2) I should like to state that the sentence (page 484) "he finally succeeded in interesting Dr. McIntyre, pharmacologist at the University of Nebraska, in developing a dependable product," is basically incorrect in its concept.

Factually, I did not have the pleasure of meeting Dr. McIntyre until the 1940 meeting of the American Medical Association referred to on page 485 of the article. Dr. McIntyre's work with curare came about in the following manner: in the early spring of 1939, Dr. A. E. Bennett of Nebraska visited me in my New York City headquarters and, himself, suggested the employment of curare as an adjunct to convulsive shock therapy. I very gladly gave Dr. Bennett a supply of that type of curare which was shortly thereafter ascertained to be the so-called "clinically adequate" variety.

It was only after work had been initiated on this curare specimen at the University of Nebraska that I was aware that Dr. McIntyre prepared and assayed the solutions then successfully employed for the first time by Dr. Bennett. This aspect of curare's employment was entirely Dr. Bennett's idea. Therefore, for most cogent reasons—relating to both the present and future status of the drug—I should like to emphasize this bit of historical actuality.

(3) On page 484: "Gill believes that the ethnobotany of curare is still complex and is not confined to the species *Chondoden-*

dron." Apart from the confessedly quibbling point that the term *Chondodendron* relates to a genus rather than a species, may I respectfully submit a clarification of the concept implicit in this sentence?

Curare—employed as a generic term for useful and otherwise arrow poisons—definitely impresses Gill with the fact that the ethnobotany of curare is indeed still complex! However, this concept relates only to those substances coming generally under the heading of "curare." On the other hand—as I have published variously—the botanical background of the so-called "clinically adequate" variety is very definitely established in terms which are both qualitative and quantitative. For example, vide: *Anesthesiology* 7: 14–23 (Jan.) 1946.

Furthermore, a curare (physically—though not chemically—all but indistinguishable from other curares) can be most successfully extracted from the species *Chondodendron tomentosum* R. & P. . . . or, indeed, from any other single plant invested with a content of curarizing principles, whether or not the activity of these principles rests upon the alkaloid d-tubo-

curarine or otherwise. Few—if any at all—entirely primitive curares, however, are made solely from any single plant. On the other hand "non-primitive" whole, crude curare is most successfully extracted from the single plant, *Chondodendron tomentosum*.

Indeed, as has been stated above, we ourselves are concluding a broad and definitive study of the factors influencing the alkaloidal content of this plant . . . to such an extent (as currently assayed in alkaloidal assay procedures) that control specimens of recent extractions have shown a d-tubocurarine content in the order of three plus times that thought to be inherent to this and closely allied species.

It was felt necessary, therefore, to augment somewhat further this concept as contained in the splendid article . . . particularly in view of this work currently being done and shortly to be published upon its completion.

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