

tures or, to use the comparison of Ehrlich, to make them fit in a certain mosaic . . ."

It would seem from the data now available that the least unsatisfactory working hypothesis is that the initial or threshold process in the action of these compounds involves a selective adsorption due to definite spacial configuration of at least a part of the onium ion.

Several papers will appear shortly describing the synthesis, chemical properties and physical effects of a number of these onium compounds.

SUMMARY

(1) An outline is given of an extended, cooperative investigation now being made on the basis for the physiological activity of onium compounds on the nervous system.

(2) Evidence has been obtained which shows that the process is much less simple than is indicated by a number of theories that have been advanced to explain drug action.

(3) It would appear that the action of these substances is not due either to their chemical decomposition, their activity as bases or to their distribution coefficients. The mobility of their ions is not, at least, of primary significance. To be physiologically active, these substances must exist in the body fluids as cations.

(4) Indirect evidence is given of the necessity of taking into account the probable differences of structure of the mechanism of the nervous system on which these substances act, or (and) the environment at the seat of action.

(5) The probability that the first determining factor in the action of these compounds is something in the nature of a selective adsorption depending on the spacial configuration of the groups involved in the ion structure is suggested.

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SOME FACTS IN THE LIFE OF THOMAS NUTTALL

THE sketches of Thomas Nuttall afford nice evidence of the persistence of error. Nearly all of them repeat mistakes either relative to his journey up the Missouri or about his return from his transeontinental trip.

The first and still the most extended sketch of his life was written by Elias Durand and read March 16,

1860, before the American Philosophical Society and published in their Proceedings, Volume 7, pp. 297 to 315. Durand places the trip up the Missouri in 1910 and dates his return to Boston from California in October, 1835.

The next significant article, anonymously appearing in the *Popular Science Monthly*, Vol. 46 (1895), pp. 689 to 696, seems to be entirely dependent on Durand and to repeat his mistakes. About the same time appeared the article in the Dictionary of National Biography; here the Missouri expedition was correctly dated, but a new variant was introduced in dating Nuttall's arrival in America in 1807; elsewhere the date is given as 1808.

The American Encyclopedia gave the date of the Missouri trip as 1810. The article in the *Popular Science Monthly*, Vol. 4, pp. 52 to 57, gives the correct date for the Missouri trip but repeats for the most part the vague or incorrect statements of Durand.

Curiously enough, precision in both cases is possible because journal accounts have been published both of the Missouri trip and of the return from California. Still more curious, the error in the Missouri date is due to Nuttall's own inaccuracy, thrice repeated in his autobiographical notes found in his geological (not geographical, as given by Durand) structure of the Valley of the Mississippi, a paper read in December, 1820, and printed in the *Journal of the Academy of Natural Sciences*, Vol. I, pp. 14 to 52. Nuttall presumably depended on his memory, in this case in error by a year. On page 24 he writes: "While ascending the Missouri in the summer of 1810." Again on page 31: "On our voyage up the Missouri in 1810." Again on page 52: "Which Mr. Bradbury and myself examined in 1810," referring to the red granitic rock seen in the vicinity of the Sioux River.

This last remark serves beyond any doubt to identify this ascent of the Missouri as that taken with the Astor party. Now of this trip we have Bradbury's account, "Travels in the Interior of America," in the years 1809, 1810, 1811, second edition, London, 1819; reprinted in "Early Western Travels," Vol. V, 1904; also Brackenridge's account, "Journal of a Voyage up the Missouri" performed in the year 1811, second edition, Baltimore, 1816; also reprinted in "Early Western Travels," Vol. VI, 1904. There is, besides, Irving's "Astoria," based on the narratives of Bradbury and Brackenridge and the journals and documents of the Astor party itself.

From these accounts it is clear that Nuttall and Bradbury left St. Louis early in January, 1811 (not 31 December, 1809, as in Durand). Bradbury and

Brackenridge returned to St. Louis July 29, Nuttall remaining to come down with Lisa somewhat later. Durand has a confused idea as to this trip. Nuttall traveled wholly by water, except for walking and other short excursions; Bradbury traveled from the Arikara villages on horseback to Fort Mandan. Durand states that they crossed the Kansas and Missouri rivers as if they were journeying by land; he says also that "they reached the Mandan villages . . . ascended still higher the Missouri River." Now the Mandan villages or, more exactly, Fort Mandan, about six miles above the villages, were the extreme limit of their ascent of the river. Durand also tells of robbery by the Indians; he must have depended on recollection of oral accounts in which perhaps experiences in other trips were confused with this ascent of the Missouri.

According to Durand, Nuttall returned to Philadelphia early in 1811; this I suppose must have been 1812, or at most at the very end of 1811. "For eight consecutive years he remained in Philadelphia occupying his summer months in botanical excursions." What consecutive means when residence was broken by summer expeditions it is hard to see. Moreover, the years must be reduced to less than seven; for according to Durand himself, basing his remark on Nuttall's account of his Arkansas expedition, Nuttall left Philadelphia October 2, 1818.

The other error is not only one of date but of movement. Nuttall accompanied Wyeth in his second trip across the continent. For this trip he arrived in St. Louis March 24, 1834. Of this expedition also we have a journal record, by J. K. Townsend, an ornithologist who accompanied Nuttall: "Narrative of Journey across the Rocky Mountains," Philadelphia, 1839, also reprinted (in part) in Thwaites's "Early Western Travels," Vol. 21. According to Durand and most others who have written of Nuttall, Nuttall separated from Townsend and returned to Boston in 1835. To quote Thwaites, in his preface to Nuttall's "Journal of Travels into the Arkansas Territory," for Thwaites also is in error; most curious of all, even after editing both Bradbury and Brackenridge, he still places the trip up the Missouri in the year 1810: "Nuttall and Townsend . . . arrived in the Sandwich Islands January 5, 1835. Two months later, leaving Townsend, Nuttall sailed to the California coast, where he passed the summer, returning thence to the Sandwich Islands and embarking for Boston by way of Cape Horn." Thwaites does not give the date of his arrival in Boston; according to Durand the date was October, 1835.

Now the reprint of Townsend omits the entries

relative to the Sandwich Islands, but enough is given to correct the foregoing. For Nuttall returned to the Columbia, not to California, in 1835; he was there with Townsend during that summer and until some time in September. "A few days ago," writes Townsend under date of October 1, 1835, "Nuttall took passage for the Sandwich Islands."

Now from Dana's "Two Years before the Mast," we are able to date Nuttall's return to Boston; for he returned in the same ship with Dana. Nuttall embarked at San Diego, May 8, 1836. "He had traveled overland to the Northwest coast, and came down in a small vessel (probably from the Sandwich Islands) to Monterey. There he learned that there was a small ship about to sail for Boston, and taking passage in the *Pilgrim* he came slowly along, visiting the intermediate ports and examining the trees, plants, earths, birds, etc., and joined us at San Diego shortly before we sailed." Dana speaks of Nuttall again at Cape Horn. The ship reached Boston September 20, 1836.

Nuttall made a good many other excursions; of these for the most part we have only the most general account. In his "Observations on the geological structure of the valley of the Mississippi," 1820, he tells us of his first journey to St. Louis. In the summer of 1809 he made a pedestrian tour around the greatest part of the southern shore of Lake Erie to Detroit, thence by canoe along the coast of Lake Huron and Michigan to Green Bay; thence by the Fox River and Ouisconsin, which disembogues itself two miles below the village called Prairie du Chien; thence to St. Louis. One would infer that he remained in or about St. Louis until he joined the Astor party early in 1811. But if he did so, he would pretty certainly have been associated with Bradbury, who was exploring that region in 1810. There appears to be no record of such companionship.

We learn also that he made excursions in New Jersey and along the coast southward to the Carolinas, but particulars are lacking. Certainly he traveled much in gathering his data for the "Sylva."

It might be worth while to set down a chronological table of such facts as are known:

Thomas Nuttall (1786-1859).

Son of Jonas Nuttall, printer.

Early studied botany, *Die. Nat. Biog.*

To Philadelphia, Mch., 1808 (1807, *Dict. Nat. Biog.*).

Botanical studies began, so Durand, under Dr. B. S. Barton.

1809, to St. Louis, by way of the Great Lakes, Green Bay, the Wisconsin and Mississippi Rivers.

1811, ascent of the Missouri as far as the Mandans, with Bradbury.

- 1812 to 1818, Philadelphia, with summer excursions, probably along the coast from New Jersey to the Carolinas.
- 1817, member of the Academy of Natural Sciences, Durand.
- 1818-9, journey through the Arkansas country, reaching New Orleans February 18, 1820.
- 1820-2, Philadelphia; preface to *Arkansas Journal* signed there November, 1821.
- 1822-34, Curator of the Botanic Garden, Harvard; resigned to join Wyeth.
1834. Wyeth's caravan began march from Independence, April 28, 1834; reached Vancouver, Wash., September 16, 1834; December 3, 1834, Nuttall embarked for Sandwich Islands; returned to Columbia; reembarked for Islands last of September, 1835; coast of California winter and spring of 1836; embarked at San Diego May 8, 1836, reached Boston September 20, 1836.
- 1836 to 1842, Philadelphia.
- 1842 inherits an estate at Nutgrove, Lancashire. There until his death, September 10, 1859, except for the last three months of 1847 and the first three of 1848.

He must have made many journeys, no account of which has been preserved; as, for example, in preparation of his "Ornithology," 1832, 1834, and for his supplement to Michaux's "Sylva," 1842-9.

Asa Gray in 1844 (quoted *Diet. Nat. Biog.*) said: "No botanist has visited so large a portion of the U. S." He visited nearly all the states of the union and made more discoveries than any other explorer of the botany of North America.

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SCIENTIFIC EVENTS

THE INTERNATIONAL INSTITUTE OF INTELLECTUAL COOPERATION

THE International Institute of Intellectual Cooperation to foster and aid cooperation between the intellectual workers of all nations will open its doors on November 1 in Paris under the auspices of the League of Nations. Financial support of the institute to the extent of 2,000,000 francs a year has been pledged by the French government and the offices will be in the Palais Royal.

The following appointments have been made to the staff of the institute: Professor Gerhart von Schulze-Gaevernitz, of the University of Freiburg-in-Breisgau, who will be chief of the section on bibliography and scientific relations; Mlle. Gabriela Mistral, formerly director of the Normal School for Girls, Santiago, Chile, will supervise the literary relations of the new organization; Professor Alfred Zimmern, Oxford University, England, chief of general relations; Professor

O. de Halecki, University of Warsaw, Poland, chief of university relations; Senor de Villalonga, Spain, chief of legal relations; Professor Dupierreux, Academie des Beaux-Arts of Antwerp, chief of art relations; Signor Giuseppe Prezzolini, Italian publicist, chief of information.

The governing board of the new institute consists of the League of Nations committee on intellectual cooperation whose membership includes Einstein, Bergson, Millikan, Hale, Mme. Curie, Gilbert Murray, Lorentz, Kellogg, and other leaders in science, literature and the arts.

National Committees on Intellectual Cooperation in many countries have been organized to aid the International Institute and the League Committee in its work. In the United States a committee has been formed with Dr. Robert A. Millikan, president of the California Institute of Technology, as chairman. This group, merging for the first time in a formal way the scientific, artistic, literary, legal, educational and other learned activities of the country, will collaborate with the International Institute of Intellectual Cooperation and the League of Nations Committee on Intellectual Cooperation.

The first meeting of the American Committee on International Intellectual Cooperation will be called early this winter. The membership includes: Dr. Millikan; Elihu Root, past president of the American Bar Association; George E. Hale, honorary chairman of the National Research Council; Charles H. Haskins, chairman of the Council of Learned Societies; Herbert Putnam, librarian of Congress and past president of the American Library Association; Virginia C. Gildersleeve, president of the International Federation of University Women; Lorado Taft, member of the American Academy of Arts and Letters; James H. Breasted, representative of American philological organizations; Charles W. Eliot, president emeritus of Harvard University, representative of American universities; Augustus Trowbridge, International Education Board; C. R. Mann, director of the American Council on Education, and Vernon Kellogg, permanent secretary of the National Research Council, secretary of the committee.

FIRST MEETING OF THE AMERICAN SOCIETY OF PARASITOLOGISTS

THE first meeting of the American Society of Parasitologists will be held in Kansas City from December 29 to 31, 1925, in association with the meeting of the American Association for the Advancement of Science. The parasitologists is a new society which was organized at the Washington meeting last year. Its purpose is to bring together those groups interested in animal parasites. Its membership in-