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## Dr ANTJE SCHREUDER

\* AMSTERDAM, 15 NOVEMBER 1887 — † AMSTERDAM, 2 FEBRUARI 1952

ANTJE (or ANNIE) SCHREUDER was the second of the four children of JAN CASPAR SCHREUDER, timber merchant († 1907), and his wife ANTJE IJSERINKHUIJSEN († 1913).

After her school-years in the Meisjes H.B.S. (secondary school for girls) ANNIE stayed at home for some years. It was only in 1910 that she commenced her study of biology in the University of Amsterdam. Her teachers were Professors HUGO DE VRIES, ED. VERSCHAFFELT and TH. J. STOMPS for botany, MAX WEBER and C. PH. SLUITER for zoology and EUGÈNE DUBOIS for geology, palaeontology, mineralogy and crystallography.

In 1916 ANNIE passed her examination in botany, zoology and geology, the so-called K IV examination which is a State examination, not a University degree.

In 1910 EUGÈNE DUBOIS published a short note (*Tijdschr. Kon. Ned. Aardr. Gen.* (2) 27, p. 401—402) on observations made by him in the peat layers of the Riekerpolder West of Amsterdam. To his surprise this peat contained not the usual alliance of low moor peat plants which he expected to find, but *Erica*, *Sphagnum* and other herbs typical of bog peat deposits. He mentioned his result to his colleague HUGO DE VRIES and suggested that one of DE VRIES' pupils might take the subject in hand, in order to establish the plant communities of this Holocene peat. DE VRIES entrusted to ANNIE SCHREUDER the task of carefully sorting out and identifying the samples of peat. Pollen analysis was not

yet practised at that time; in its place other plant remains, fibres, pieces of leaves and wood had to serve as a base for determining the nature of the deposit. It was a long and tedious job, but ANNIE succeeded in accomplishing it, confirming DUBOIS' idea that the peat was in fact a bog peat. The results of her investigations were not published, but DUBOIS was obviously so content with the achievement that he took ANNIE SCHREUDER as his assistant in 1917.

From that year onward until DUBOIS resigned in his 70th year in 1929 ANNIE SCHREUDER was his right hand support. In geology, palaeontology and anthropology DUBOIS was an inspiring and masterly scholar. Being a medical doctor, however, he was not particularly interested in minerals and crystals, and the teaching of mineralogy and crystallography, especially the practical courses, he therefore left all too readily to his assistant. In this way ANNIE SCHREUDER was charged with the class room work of generations of students, and she did it with indefatigable energy and good humour. The making of thin sections, the chemistry of minerals, the use of the polarising microscope, the preparation of fragile or clumsy fossils and the supervision of the drawing exercises of the students were her daily tasks. In addition she prepared the demonstration objects, lantern slides and wall-maps for DUBOIS' lectures and every one who had the privilege of studying under this brilliant, but at the same time unevenly balanced and impractical man realised that from morning to night a high

degree of reservation, self sacrifice and patience were needed by his staff. DUBOIS had the habit of just lifting a corner of the veil of a scientific conception, but he was loath to settle down and work it out thoroughly: he preferred to leave to others with more perseverance the task of continuing and finishing it. It is to ANNIE SCHREUDER's immemorial credit that she succeeded in setting DUBOIS to work, so that he, the very author of the idea, should bring the problem to an end himself and earn the appreciation he so fully deserved.

In the meantime ANNIE pursued her own studies in the University, passing her candidaats (B.Sc.) in 1921, doctoraal (M.Sc.) in 1923. In order to obtain a better education in mineralogy and crystallography she worked some

specialised more and more in fossil vertebrates, especially mammals. Not only in the Netherlands, but all over Western Europe she became the undisputed authority on quaternary bone remains.

After the resignation of DUBOIS in 1929 the new professor of geology no longer required ANNIE as his assistant. Therefore she resigned early in 1930.

From this year onward she lived privately, joining the staff of the Zoological Museum of Amsterdam as a honorary collaborator.

Being of rather fragile health she was not able to make long and strenuous excursions in the field, but she encouraged several colleagues and younger scientists to investigate deposits where vertebrate bones could be expected. A



phot. COR VAN WEELE, Amsterdam, 1948

months in Groningen under J. H. BONNEMA, professor of geology in that University.

Her doctor thesis „Bijdrage tot de kennis van Conodontes and Trogontherium” was presented to the Amsterdam University and defended on June 19, 1928, for which the degree of Dr.Sc. was awarded to her. The dissertation is a summary in Dutch of her later, more elaborate paper no. 5 (1929).

Since this publication ANNIE SCHREUDER

special research problem was the examination of owl pellets from various parts of the country. From the preparation and identification of the recent bones and teeth of rodents and insectivores from these remains of the diet of, chiefly, the barn owl and the long-eared owl, she developed an easy routine in recognising isolated fragments of teeth and bones. This proved to be invaluable in her work on fossil fragments. Incidentally the circumstantial in-

vestigation of owl pellets also yielded a better insight into the distribution of these minor mammals in the Netherlands.

Her colleagues and the younger people were only too glad to bring or to send her their collections and provisional identifications for approval. If they did not work out the results themselves ANNIE SCHREUDER revised the material carefully and published such details as appeared to her to be of lasting interest. In this way she stood in regular contact with the geologists of the Netherlands Geological Survey, with the Rijksmuseum van Natuurlijke Historie at Leiden, with the Natuurhistorisch Museum at Maastricht, with the Netherlands Plant Protection Service at Wageningen and with various private naturalists.

Characteristic of her thorough method of working is the opening sentence of her Revision of Fossil Water-moles (no. 26, 1940): "When I set out to examine the scanty remains of *Desmana* gathered in the Netherlands, it soon appeared necessary to revise the fossil Water-moles recorded up till the present and to compare them with each other, which had not hitherto been done." This introductory revision resulted in a paper of 133 pages.

For a biologist she was extremely well acquainted with geology. These two branches of science made her the very person who could investigate and describe the faunal composition of fossiliferous layers. Especially the early Pleistocene and its vertebrate remains were her chief field of interest. In various papers the Dutch and the foreign conceptions of the transition from Pliocene to Pleistocene as evident from biological remains were discussed. Summaries were published in no. 20, 1936a, no. 28, 1942 and no. 44, 1950a. All her publications are the result of keen observation and good descriptive talents, combined with an accurate study of the zoological and stratigraphical literature.

#### RECENT AND FOSSIL MAMMALS OF THE NETHERLANDS DESCRIBED IN THE PUBLICATIONS OF DR ANTJE SCHREUDER

##### Holocene:

*Erinaceus europaeus* L., 1947 b.  
 Soricidae, 1945 b.  
 Microtini, 1931c; 1933 b; 1945 b; 1947 a, 1948.  
 Murini, 1931 c; 1945 b.  
*Equus* cf. *caballus* L., 1943 b, p. 410—419.

##### Upper & Middle Pleistocene:

For the boundary between Upper and Middle Pleistocene see 1936 b, p. 20; 1943 b, p. 430; 1950 c.

*Desmana* sp., 1939 a; 1940, p. 214; 1943 b, p. 405 (Bergambacht).  
*Talpa* cf. *europaea* L., 1943 b, p. 406.  
*Lemmus* sp., 1936 b, p. 11; 1950 c.  
*Mimomys intermedius* NEWTON, *M. savini* HINTON, 1933 b, p. 8; 1936 b, p. 8; 1943 b, p. 400.  
*Microtus* spp., 1933 b, p. 13; 1936 b, p. 12; 1943 b, p. 407; 1950 c.  
*Arvicola* spp., 1936 b, p. 9; 1943 b, p. 409; 1950 c.  
*Castor fiber* L., 1943 b, p. 422.  
 Leporid, 1943 b, p. 421.  
*Equus* spp., 1943 b, p. 410—419.  
*Bos primigenius* BOJANUS or *Bison priscus* BOJANUS, 1943 b, p. 419—421.  
*Cervus* cf. *elaphus* L., 1943 b, p. 421.

##### Tegelen (Tiglien):

A. Clay pits at Tegelen (prov. Limburg), 1928 b; 1929; 1933/4; 1935 a; 1936 c; 1936 d; 1939 a; 1940; 1942; 1943 a; 1945 c (with list of species!); 1950 d; 1951 a.  
 B. Synchronous strata elsewhere in the Netherlands.  
*Desmana tegelensis* SCHREUDER, 1939 a; 1940; 1941; 1943 b, p. 401—405.  
*Talpa praeglacialis* KORMOS, 1936 b, p. 5; 1943 b, p. 405.  
*Mimomys pliocenicus* FORSYTH MAJOR, *M. reidi* HINTON, *M. pusillus* MÉHELY, *Dolomys milleri* NEHRING, 1933 b, p. 4—7; 1936 b, p. 3—8; 1943 b, p. 399—401.  
 Black Fossils (Poederlien?) dredged from the estuary of the river Scheldt: *Anancus arvernensis* (CROIZET & JOBERT), 1944 a; 1945 a; 1949 b; 1950 a & e.  
*Archidiskodon planifrons* (FALCONER & CAUTLEY), 1944 a; 1945 a; 1949 b; 1950 a & e.

So wide became the fame of ANNIE SCHREUDER that from Britain, Germany, Hungary, Switzerland, France and other countries people consulted her or sent their material for confirmation. With all these colleagues she had a lively correspondence, exchanging experience and publications. She never pursued personal gain or honour, but only worked for the benefit of others and of science.

A few years before the second world war a serious apoplexy affected her, disabling her right hand. For several months she could not work, but fortunately she later regained her health. Her right hand, however, never regained its original strength. Far from being depressed by this hampering incident ANNIE SCHREUDER used to say: "this gives me better opportunities for studying the micro-mammalia, because I can now shift off the large and heavy bones to others."

Even in later years when minor heart attacks occurred now and then her unquenchable spirit never flagged. After each temporary ailment she was happy to notice the progress of restoration: "I am always recovering". It is a

complete wonder that a person with so defective a circulatory system could continue to be so energetic and good-humoured. Always on the very first day on which the doctors allowed her to leave the bed (and probably often before that date stealthily) she sat at her desk reading the latest literature or examining new material. She had a sharp judgment of people, and a keen talent for discriminating between pedantry and real intelligence unto science. Both in her letters and in her conversation she had a peculiar slow, badinaging style which was at the same time amusing and edifying. She could readily appreciate genuine, honest devotion to science, but she remorselessly rendered false pretensions ridiculous.

These notes try to put on record some few incidents, personal recollections and the scientific achievement of ANNIE SCHREUDER for those who knew her well and held her in affection, and for those who will be continuing her work in the same spirit of veracity, accuracy, knowledge and experience.

Amsterdam, Zoölogisch Museum

P. J. VAN DER FEEN.

W. S. S. VAN BENTHEM JUTTING

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Two papers of which the manuscripts are ready for the press, one on „Zoogdieren in de verschillende landschappen van Limburg” and one on “Les Micromammifères de la grotte de Fontéchevade (Charente)”, have not yet been published.