

non-random distribution of perihelia of long-period comets (known to A S Eddington) in the celestial sphere, to substantiate his accretion theory of cometary origin. Although his theory is no longer tenable as mentioned, the non-random distribution is widely accepted as a means of testing a mechanism which controls their motion.

Lyttleton collaborated only with the best of applied mathematicians, such as H Bondi. With him, Lyttleton worked on cosmology and geophysics. They discussed the cosmological effect of a hypothetical very small difference between the charges of the electron and the proton. Also they investigated a fluid motion induced in the Earth's core generated by the slowing down of the Earth's rotation by the tidal friction.

In later years, he came to be interested in the origin of folded mountains. Being so close to the geophysicist H Jeffreys, who was also a Fellow of St John's, he adopted the model of an Earth such that the radius decreased to form folded mountains. At that time, there was no consensus as to the nature of the core, which is now believed to be largely made of iron, and the possibility was discussed that the core is nothing but a high-pressure phase of the mantle material. Lyttleton showed that a slowly increasing core mass would make the Earth shrink to provide the shortening of the Earth circumference required by H Jeffreys.

He was also an excellent supervisor, helping students to solve Tripos problems with elegance and clarity.

Thus he has made great contributions to our understanding of the astronomical world in a manner expected of a Cambridge mathematician either directly, or indirectly by raising new ideas. For these achievements, he was rightly awarded a Gold Medal of the Society of which he had served as a member of the Council, in 1959 and a Royal Medal of the Royal Society in 1965.

He was Professor of Theoretical Astronomy of Cambridge University from 1969 until retirement in 1978, and had been a professorial Fellow of St John's College. He died on 16 May 1995. I am privileged to have been one of his students.

Acknowledgements

I am grateful to The Master and the Archivist of St John's College, and Dr Elisabeth Leedham Green of the University Library, Cambridge for useful information in preparing the obituary.

Shin Yabushita

Albrecht Unsöld 1905–1995

Albrecht Unsöld was one of the towering giants of 20th century astrophysics. He was elected an Associate of the RAS in 1953, received our Gold Medal in 1957 and gave us a George Darwin Lecture later that year.

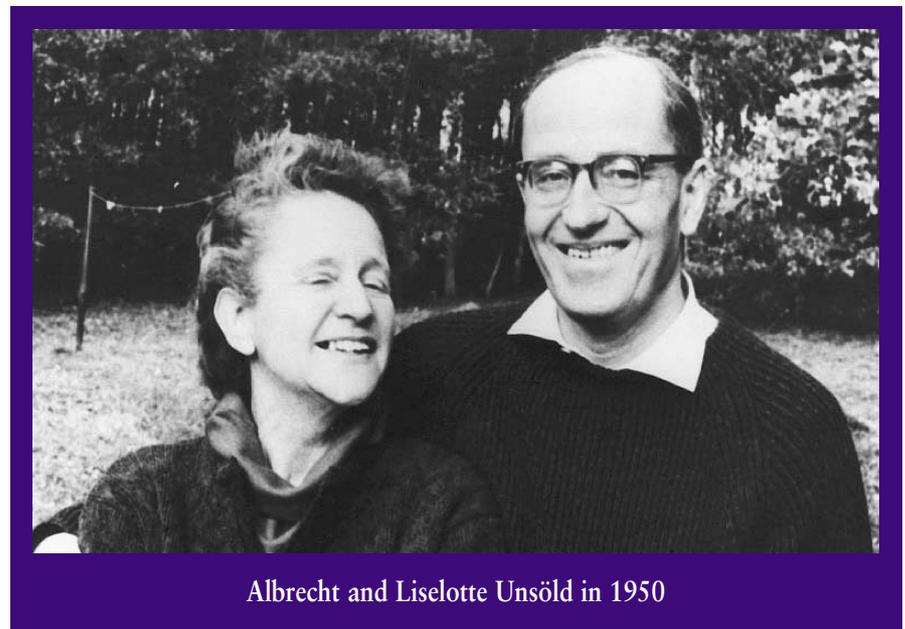
He was born on 20 April 1905, the son of a minister in the village church of Bolheim, near Tübingen. By the age of 14 he had already drafted his first scientific paper, which he sent to Arnold Sommerfeld in Munich (his father sent an accompanying letter apologizing for his son's boldness and making a plea – to no avail – that Sommerfeld should clip Albrecht's wings). At that time the first edition of Sommerfeld's *Atombau und Spektrallinien* had just been published, which was concerned with the use of the "old" quantum theory in explaining many features of atomic structures and atomic spectra. By the time of those marvellous years of 1925–1926, when the laws of present-day quantum theory were first enunciated, Unsöld was already working with Sommerfeld. Aware of the enormous potential of the new theory, Sommerfeld was busy dividing the whole of physical science between his students: you take chemistry; you, solid state; you, radiation theory... (it is not difficult to fill in the names). Unsöld took astronomy.

The first challenge was to interpret solar spectra, both photospheric and chromospheric. In order to meet that challenge it was soon clear that quantum theory alone was not enough. Fur-

ther observations were required, and before long Unsöld was using the new Einstein tower at Potsdam and then, a little later, the 150 ft solar tower at Mount Wilson. His remarkable talents were soon recognized and, at the unprecedented early age of 27, he was appointed to a chair at the Christian Albrechts University at Kiel where, declining offers of prestigious appointments elsewhere, he stayed for the rest of his life.

He established a remarkable research school and trained an entire generation of German astronomers, including Bodo Baschek, Karl-Heinze Böhm, Erika Böhm-Vitense, Hartmut Holweger, Kurt Hunger, Gerhard Traving, Deiter Reimers and Volker Weidemann.

As Director of the Institut für Theoretische Physik und Sternwarte he maintained close relations with the sister Institut für Experimentalphysik under the direction of Walter Lochte-Holtgreven, a specialist in problems of plasma physics which were very relevant to the work in astronomy. Later on, a programme of work in radio astronomy was also established at Kiel. All of Unsöld's work depended on bringing together results from theory, from experiment, and from astronomical observations. He greatly profited from many visits to the USA and the use of American observational facilities, and he had many contacts with astronomers worldwide, particularly with those in Holland and in Britain.



Albrecht and Liselotte Unsöld in 1950

Unsöld's *Physik der Sternatmosphären*, first published in 1937, served for many years as the "bible" for all workers in stellar-atmosphere theory. In order to deduce, from the observed spectra, both the temperature and density structures of the atmospheres and the relative abundances of the chemical elements, a wide range of physical theory was required: thermodynamics and statistical mechanics; theories of radiative transfer; and the quantum mechanics of the atomic processes. Unsöld's method of weighting functions gave first estimates of relative abundances. His pioneering studies of the pressure-broadening of spectrum lines were of lasting importance. He was the first to recognize that partial ionization of hydrogen in atmospheres of solar-type stars could modify thermodynamic quantities, and hence lead to the possibility of convective movements.

During the war years, while drafted to serve as a meteorologist, Unsöld undertook his classic studies of the atmosphere of the B0 star τ Sco. That work may not have been of much importance for the German war effort, but it did lay the foundations for much subsequent research in astronomy. His "coarse analysis", which gave a first approximation, was followed by a "fine analysis" using high-resolution spectra obtained at the McDonald Observatory in 1939. Some 20 years later controversy raged about whether it was justified to calculate level populations assuming local thermodynamic equilibrium (LTE). The issue was finally settled when it became possible to make detailed computations allowing for all of the most important processes populating and depopulating the levels (Unsöld himself never had much of a taste for such computational work). The upshot was to show that non-LTE effects are important for hot stars, but that for many problems the LTE approach, used in the early work, provides a good first approximation.

In his later years, Albrecht had failing eyesight and he was allowed to read and write for no more than three hours a day. The remaining hours were put to good use. I recall with the greatest pleasure afternoons spent at his home, with a lit candle and good German coffee and brandy on a table, discussing every topic imaginable, from LTE and the temperature of the solar corona, to art, literature, music, politics and even religion. His talents knew few bounds: he played the violin in a local orchestra

and was a fine painter in water-colours. At their Kiel home in Sternwartenweg it was also a delight to meet his wife Liselotte and their daughter Annelotte. (They also had three sons, but they had all left home by the time of my visits.)

Albrecht once met me at Kiel railway station and picked up my heavy suitcase. I protested, "I am much younger than you". He strode on and I stopped. "Albrecht, you are very obstinate." "Yes, I have been told that before," and on he strode. Until its merger with *Astronomy and Astrophysics* in 1968, the *Zeitschrift für Astrophysik* was edited by Unsöld who, like Subrahmanyan Chandrasekhar in his editorship of the *Astrophysical Journal*, insisted on the highest standards. About one third of all papers submitted were rejected out-of-hand, ("I don't need a second opinion to recognize shoddy work"). Maybe another one-third were accepted without further demur, and only a minority were sent to referees.

The sheer breadth of Unsöld's knowledge of astronomy emerges from reading his book *Der Neue Kosmos*, first published in 1967 and then a couple of years later as *The New Cosmos*, translated by Bill McCrea. Unlike some American books, it was no "astronomy for poets". Its aim was to provide an introduction to the whole of astronomy for those who already had some basic knowledge of mathematics and physics. The present generation of students is fortunate in having the splendid fifth edition, written jointly with Baschek.

Unsöld was elected to membership of the Deutsche Akademie der Naturforscher in 1962, and received their Gold Medal in 1973. In addition to our Gold Medal, which I have already mentioned, he received the Bruce Medal of the Astronomical Society of the Pacific in 1956, and in that same year he was made an Honorary Member of the Royal Astronomical Society of Canada. He was awarded honorary doctorates from the Universities of Edinburgh, Munich and Utrecht. He died on 23 September 1995.

Acknowledgements

In writing this obituary I have used some material from obituaries written by Prof. Volker Weidemann and published in Sterne und Weltraum and in The Publication of the Astronomical Society of the Pacific. I am much indebted to Prof. Weidemann for sending copies to me.

Mike Seaton

Deaths of Fellows 1996

- Mr R C Ross**
Born 7 May 1923
Died 23 February 1996
Elected 12 November 1976
- Mr J K Scholey**
Born 7 April 1915
Died 1996
Elected 8 March 1985
- Mr L J C Wooliscraft**
Born 28 August 1944
Died 12 March 1996
Elected 9 May 1975
- Mr F Mathews**
Born 19 August 1911
Died 1996
Elected 14 October 1966
- Mr A C Wood**
Born 3 February 1916
Died April 1996
Elected 9 November 1973
- Mr R N S Allen**
Born 24 October 1933
Died 8 June 1996
Elected 14 February 1973
- Brigadier G Bomford OBE**
Died 10 February 1996
Elected 10 January 1936
- Professor J E Nafe**
Died 7 April 1996
Elected 11 December 1959
- Professor G Chanmugan**
Born 24 October 1939
Died 25 March 1996
Elected 10 January 1971
- Professor V Ambartsumian**
Born 18 September 1908
Died 13 August 1996
Associate 10 April 1953
- Mr R G Andrews**
Born 4 February 1903
Died 17 August 1996
Elected 10 March 1950
- Mr H L Pugh**
Born 1900
Died 8 September 1996
Elected 8 March 1968
- Dr D Emerson**
Born 1 September 1943
Died 19 September 1996
Elected 14 February 1969
- Dr L A Storer**
Born 17 May 1920
Died 1 June 1996
Elected 19 October 1959
- Professor P H Fowler**
Born 27 February 1923
Died 8 November 1996
Elected 8 September 1967
- Professor M Nicolet**
Born 1 January 1912
Died 8 October 1996
Elected 9 December 1949
Associate 10 February 1967
- Mr O C A Langmark**
Born 6 February 1921
Died 26 October 1996
Elected 12 May 1961

The new cosmos. by. Unsöld, Albrecht, 1905-1995. Publication date. 1991. Topics. Astronomy, Astronomie, Astrophysik, Sterrenkunde, Kosmologie, Astronomia, Univers, Astrophysique, Universe. Publisher. Berlin ; New York : Springer-Verlag. Is Albrecht Unsöld still alive? No, he died on 09/23/1995, 25 years ago. He was 90 years old when he died. What was Albrecht's zodiac sign? Albrecht Unsöld zodiac sign was taurus. Awards (4). Awarded Gold Medal of the Royal Astronomical Society in 1956 , awarded Bruce Medal in 1955 , awarded Cothenius Medal in 1972 , nominated Nobel Prize in Physics in 1958 , Education. He graduated from University Of Tübingen. Albrecht Unsöld Is A Member Of. Albrecht Unsöld was born on the 20th of April 1905, which was a Thursday. Other People. German Bestelmeyer. German Architect. Susanne Albrecht. Former Member Of The Red Army Faction. Albrecht Haushofer. Albrecht Unsöld (1905-1995). Article. Dec 1996. Publ astron SOC pac. Volker Weidemann. Albrecht Unsöld, the ASP's Bruce Medalist for 1956, passed away on September 23, 1995, at the age of 90. He was most famous for his contributions to the theory of stellar atmospheres and he trained a whole generation in this field. He soon applied what he had learned in atomic physics in the early twenties to astrophysics, first to the solar spectrum, later on to stellar spectra in general. Albrecht Unsöld. Mitteilung Astronomische Gesellschaft, no. Bodo Baschek. Albrecht Otto Johannes Unsöld (20 April 1905 – 23 September 1995) was a German astrophysicist known for his contributions to spectroscopic analysis of stellar atmospheres. Albrecht Unsöld was born in Bolheim, Württemberg, Germany. After school attendance in Heidenheim, Unsöld studied physics at the University of Tübingen and the University of Munich. At Munich, he studied under Arnold Sommerfeld, and was granted his doctorate in 1927. As a Fellow of the Rockefeller Foundation, he was an assistant in Unsöld: It was at the Liege meeting. As president of the meeting, I had to give some sort of coordinated introduction. And I did it in the form of giving a 50 years retrospect, because it's just now 50 years, since the modern development of astrophysics into a quantitative science began, based on quantum theory, quantum mechanics and so on I made a photocopy of my. This transcript may not be quoted, reproduced or redistributed in whole or in part by any means except with the written permission of the American Institute of Physics.