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Note

History of the recognition of organic geochemistry in geoscience

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Abstract

The discipline of organic geochemistry is an outgrowth of the application of the principles and methods of organic chemistry to sedimentary geology. Its origin goes back to the last part of the nineteenth century and the first part of the twentieth century concurrent with the evolution of the applied discipline of petroleum geochemistry. In fact, organic geochemistry was strongly influenced by developments in petroleum geochemistry. Now, however, organic geochemistry is considered an umbrella geoscience discipline of which petroleum geochemistry is an important component. Published by Elsevier Science Ltd.

1. Origin

There is a general consensus that organic geochemistry as a scientific discipline began in the 1930s with the first modern study of the geochemistry of organic molecules by Alfred Treibs (1936) (English translation in Kvenvolden, 1980). Treibs discovered and described porphyrin pigments in shale, oil, and coal. Free-base as well as metal-complex porphyrins were identified in these geological materials and demonstrated to be degradation products from chlorophyll and hemin. This discovery showed that there is a linkage between biochemicals in living matter and compounds found in geochemical organic matter on earth. For his work, Treibs is regarded as the “father of organic geochemistry”.

2. Organizations

It was almost 30 years later, however, before organic geochemistry was formally organized and recognized as a geoscience. The close ties between organic geochemistry and petroleum geochemistry are evident in this recognition. Petroleum geochemistry began to gain recognition as a scientific discipline in 1959 when a meeting

entitled “General Petroleum Geochemistry Symposium” was held at Fordham University in New York, in conjunction with the 5th World Petroleum Congress. During the same year, the Organic Geochemistry Division (OGD) of The Geochemical Society (GS) was organized by B. Nagy and met for the first time in 1960 with the Geological Society of America in Denver, Colorado. By early 1961, OGD was recognized as an integral part of GS. The officers of OGD from 1959 to 2003 are shown in Table 1.

3. Conferences

Following the organization and recognition of OGD, two series of conferences began and have continued to the present. In September 1962, the 1st International Meeting on Organic Geochemistry was held in Milan, Italy, with U. Colombo as Chairperson. International Meetings on Organic Geochemistry have met consistently every other year, except for a three year hiatus between 1968 and 1971 (Table 2). The 20th meeting in this sequence was held in 2001 in Nancy, France. In 1963, a Gordon Research Conference entitled “Origin of Petroleum,” co-chaired by H. Smith and F. Rossini, was held at Tilton School, New Hampshire. For the next six years, Gordon Research Conferences were convened and dealt with broad issues in geochemistry, including petroleum geochemistry. Gordon Research Conferences

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Table 1
Officers of the Organic Geochemistry Division (OGD) of The Geochemical Society

| Years | Chairperson | Secretary |
|-----------|----------------|---------------------|
| 1959–1960 | B. Nagy | E.G. Baker |
| 1960–1961 | H. Smith | I. Breger |
| 1961–1962 | P. Witherspoon | I. Breger |
| 1962–1963 | J. Hunt | J. Vallentyne |
| 1963–1964 | R. Siever | J. Vallentyne |
| 1964–1965 | I. Breger | W. Meinschein |
| 1965–1966 | G. Erdman | W. Meinschein |
| 1966–1967 | R. Bader | W. Meinschein |
| 1967–1968 | J. Vallentyne | E. Hare |
| 1968–1969 | W. Meinschein | E. Bray |
| 1969–1970 | D. Spencer | E. Bray |
| 1970–1971 | K. Kvenvolden | E. Bray |
| 1971–1972 | R. McIver | V. Swanson |
| 1972–1973 | P. Given | V. Swanson |
| 1973–1974 | W. Robinson | V. Swanson |
| 1974–1975 | S. Silverman | R. Mitterer |
| 1975–1976 | W. Sackett | R. Mitterer |
| 1976–1977 | I. Kaplan | R. Mitterer |
| 1977–1978 | W. Orr | Sr. M. Murphy |
| 1978–1979 | C. Barker | Sr. M. Murphy |
| 1979–1980 | J. Palacas | Sr. M. Murphy |
| 1980–1981 | J. Winters | Sr. M. Murphy |
| 1981–1982 | T. Hoering | Sr. M. Murphy |
| 1982–1983 | R. Mitterer | Sr. M. Murphy |
| 1983–1984 | G. Claypool | C. Lee |
| 1984–1985 | J. Zumberge | C. Lee |
| 1985–1986 | R. Gagosian | C. Lee |
| 1986–1987 | M. Schoell | S. Palmer/J. Whelan |
| 1987–1989 | J. Hayes | J. Whelan/S. Macko |
| 1989–1991 | P. Meyers | S. Macko |
| 1991–1993 | C. Lee | S. Macko |
| 1993–1995 | J. Curiale | S. Macko |
| 1995–1997 | J. Hedges | S. Macko |
| 1997–1999 | M. Lewan | S. Macko |
| 1999–2001 | M. Engel | P. Ostrom |
| 2001–2003 | K. Peters | P. Ostrom |

devoted specifically to organic geochemistry began in 1968, with S. Silverman as Chairperson, and have been held every other year since then, at Holderness School, New Hampshire. The 1968 conference was titled ‘Organic Geochemistry,’ but in 1970 and 1972 the conferences were simply titled ‘Geochemistry’ (although organic geochemistry was the main topic). From 1974 to the present, the name ‘Organic Geochemistry’ has been used (Table 3).

4. Journal and textbooks

With the proliferation of research stimulated by these conferences, the need for a specialty journal became evident, and the journal *Organic Geochemistry* was

established in 1977 by I.A. Breger. He served as Editor from 1978 until 1982, the time of his death, when E.W. Baker assumed the editorship. With the organization by P.A. Schenck and colleagues of the European Association of Organic Geochemists (EAOG) in 1983 (Table 4), the journal became affiliated with EAOG, and in 1985, the publication was designated as the Official Journal of the EAOG. Table 5 lists the editors and co-editors of *Organic Geochemistry* since 1978.

In addition to the journal *Organic Geochemistry*, several books and compilations of papers, which serve as textbooks on the subject, have been prepared. Examples are Breger (1963), Eglinton and Murphy (1969), Swain (1970), Philp (1985), Johns (1986), Moldovan et al. (1992), Whelan and Farrington (1992), Engel and Macko (1993), Killops and Killops (1993), and Peters and Moldovan (1993). Textbooks and compilations of papers focusing on petroleum geochemistry have also been published: Nagy and Colombo (1967), Tissot and Welte (1978, 1984), Hunt (1978, 1995), Waples (1981), Brooks (1981, 1983), Brooks and Welte (1984) and Waples (1985).

5. Awards

In recognition of the organic geochemical discoveries made in the 1930s by Treibs (1936), an award was created in his name. The Alfred E. Treibs Award is given for “outstanding contributions to Organic Geochemistry,” and was awarded to A.E. Treibs (honorary) and to the first designated recipient, G.T. Philippi, in 1979. As of 2001, there have been 16 recipients, with A.G. Douglas designated to receive the award in 2002 (Table 6). The Pieter A. Schenck Award, named for the lead organizer of EAOG, is given every second year to a scientist under 35 years of age who has made a major contribution to any specific area of organic geochemistry or related field. The first awardee was J. Sinninghe Damsté in 1993; the awardee for 2001 was K. Grice (Table 6). The Australian Organic Geochemistry Medal for lifetime achievement in organic geochemistry was first awarded to J. Smith in 1991 and has been given approximately every other year since. R. Summons will receive the honor in 2002 (Table 6).

6. Community

The community of organic geochemists is composed of many individuals. The accompanying foldout shows “A Community in Organic Geochemistry”—a pictorial record with 132 individuals who have contributed to the field over the past 40 years. The photographs were taken mostly by the author at the International Meetings and Gordon Research Conferences. The collection of photographs is an extensive, but by no means comprehen-

Table 2
International Meetings on Organic Geochemistry

| No. | Year | Place | Chairperson(s) | Editors of Proceedings |
|-----|------|-------------------------------|------------------|----------------------------------|
| 1 | 1962 | Milan, Italy | U. Colombo | U. Colombo and G. Hobson |
| 2 | 1964 | Rueil-Malmaison, France | M. Louis | G. Hobson and M. Louis |
| 3 | 1966 | London, U.K. | G. Hobson | G. Hobson and G. Speers |
| 4 | 1968 | Amsterdam, The Netherlands | E. Eisma | P. Schenck and I. Havenaar |
| 5 | 1971 | Hannover, Germany | H. v. Gaertner | H. v. Gaertner and H. Wehner |
| 6 | 1973 | Rueil-Malmaison, France | B. Tissot | B. Tissot and F. Bienner |
| 7 | 1975 | Madrid, Spain | J. Gómez Angulo | R. Campos and J. Goñi |
| 8 | 1977 | Moscow, USSR | N. Vassoevich | N. Vassoevich |
| 9 | 1979 | Newcastle-upon-Tyne, U.K. | A. Douglas | A. Douglas and J. Maxwell |
| 10 | 1981 | Bergen, Norway | M. Bjorøy et al. | M. Bjorøy et al. |
| 11 | 1983 | The Hague, The Netherlands | P. Schenck | P. Schenck et al. |
| 12 | 1985 | Jülich, Germany | D. Leythaeuser | D. Leythaeuser and J. Rullkötter |
| 13 | 1987 | Venice, Italy | L. Mattavelli | L. Mattavelli and L. Novelli |
| 14 | 1989 | Paris, France | B. Durand | B. Durand and F. Behar |
| 15 | 1991 | Manchester, U.K. | D. Manning | C. Eckardt et al. |
| 16 | 1993 | Stavanger, Norway | K. Øygard | N. Telnæs et al. |
| 17 | 1995 | Donostia-San Sebastian, Spain | J. Grimalt | VII Parts w/ 24 Guest Editors |
| 18 | 1997 | Maastricht, The Netherlands | B. Horsfield | B. Horsfield et al. |
| 19 | 1999 | Istanbul, Turkey | M. Yalçın | M. Yalçın and S. Inan |
| 20 | 2001 | Nancy, France | P. Landais | R. Michels et al. |

Table 3
Gordon Research Conferences on Organic Geochemistry
(Holderness School, New Hampshire)

| Year | Chairperson |
|------|---------------|
| 1968 | S. Silverman |
| 1970 | W. Orr |
| 1972 | G. Hodgson |
| 1974 | J. Winters |
| 1976 | J. Hunt |
| 1978 | R. McIver |
| 1980 | E.W. Baker |
| 1982 | W. Seifert |
| 1984 | K. Kvenvolden |
| 1986 | J. Zumberge |
| 1988 | J. Hayes |
| 1990 | M. Schoell |
| 1992 | J. Whelan |
| 1994 | M. Lewan |
| 1996 | R. Alexander |
| 1998 | K. Peters |
| 2000 | J. Hedges |
| 2002 | M. McCaffrey |

Table 4
Officers of the European Association of Organic Geochemists
(EAOG)

| Years | Chairperson | Secretary |
|-----------|---------------|---------------|
| 1983–1990 | P.A. Schenck | R.G. Schaefer |
| 1990–1993 | G. Eglinton | S.R. Larter |
| 1994–1995 | G. Eglinton | B. Horsfield |
| 1995–1999 | B. Horsfield | J. Rullkötter |
| 1999–2002 | B. Horsfield | S. Derenne |
| 2002– | R.L. Patience | S. Derenne |

or two words, a task that is impossible, but practical for the purpose of this foldout.

7. Summary

Organic geochemistry as an organized and recognized geoscience has enjoyed a relatively short but rich history extending over a little more than 40 years. During this time, the field has enhanced scientific knowledge concerning organic matter from organic molecules to kerogen, as these organic substances play various roles on the geologic stage, from the earliest Precambrian to the present, and including extra-terrestrial materials. The future of Organic Geochemistry looks bright. The increasing recognition of the importance of biogeochemical processes in geoscience provides fertile ground

sive, look-back at the organic geochemical community. For the purpose of the foldout, the photographs are organized into twelve organic geochemical categories. These categories represent an attempt to summarize individual contributions to organic geochemistry in one

Table 5
Editors of the journal *Organic Geochemistry*

| 1978–1982 | 1983–1986 | 1987–1988 | 1989–1992 | 1992– |
|-------------|------------|----------------------------|----------------------------|--|
| I.A. Breger | E.W. Baker | E.W. Baker P.A. Schenck | E.W. Baker A.G. Douglas | J.A. Curiale A.G. Douglas E.W. Baker, emeritus |

Table 6
Awards in organic geochemistry

| Year | Recipient |
|---|---------------------|
| <i>Recipients of the Alfred E. Treibs Award (Honorary Award to A.E. Treibs in 1979)</i> | |
| 1979 | G.T. Philippi |
| 1980 | B.P. Tissot |
| 1981 | G. Eglinton |
| 1982 | J. M. Hunt |
| 1983 | D.H. Welte |
| 1984 | W.K. Seifert |
| 1985 | P. Albrecht |
| 1987 | T.C. Hoering |
| 1989 | J.R. Maxwell |
| 1991 | J.W. deLeeuw |
| 1993 | I.R. Kaplan |
| 1995 | K.A. Kvenvolden |
| 1996 | P.L. Parker |
| 1998 | J.M. Hayes |
| 2000 | J.I. Hedges |
| 2001 | J.W. Smith |
| 2002 | A.G. Douglas |
| <i>Recipients of the P.A. Schenck Award</i> | |
| 1993 | J. Sinninghe Damsté |
| 1995 | M. McCaffrey |
| 1997 | K. Freeman |
| 1999 | S. Schouten |
| 2001 | K. Grice |
| <i>Recipients of the Australian Organic Geochemistry Medal</i> | |
| 1991 | J. Smith |
| 1993 | B. Johns |
| 1995 | T. Powell |
| 1996 | D. McKirdy |
| 1998 | R. Alexander |
| 2000 | B. Batts |
| 2002 | R. Summons |

for the application of the principles and practices of organic geochemistry.

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Associate Editors—J. Curiale and A. Douglas

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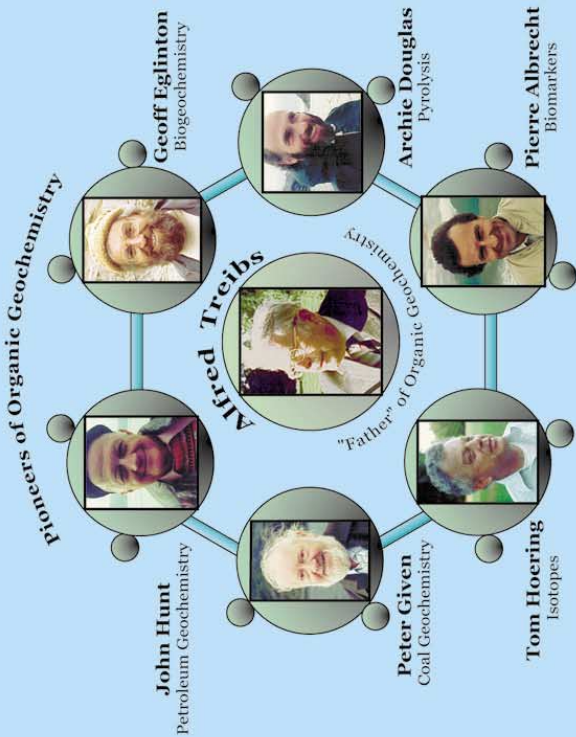
A COMMUNITY IN ORGANIC GEOCHEMISTRY 2002

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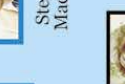





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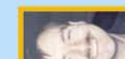



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