

## **R. M. STAINFORTH: HIS CONTRIBUTION TO THE STRATIGRAPHY IN VENEZUELA**

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Robert Masterman Stainforth (known usually as R.M. Stainforth or Charles) has born in October 5, 1915 in Kingston-upon-Hull in East Yorkshire, England, he studied at the Royal School of Mines in London where he obtained his degree in geology at the young age of 23, and immediately crossed to America to begin his brilliant career working for Trinidad Leaseholds Limited in Pointe-à-Pierre, island of Trinidad, which was then a British colony. He was married to Anne Stainforth and they have two children.

At the beginning of 1949, he was working for the Tropical Oil Company in Bogotá, Colombia and later moved to the International Petroleum Company in Peru, at first in Negritos, later (1950-54) in Talara. During these years, he completed numerous published papers and internal reports. In 1952 he was awarded an external Ph.D., at the age of 37, by the University of London. In February, 1953, he came to Venezuela for the first time, to spend six months studying the Oligocene and Miocene microfaunas.

Coming from Talara, Peru he arrived in Caracas on February 5, 1953 to work for Creole Petroleum Corporation for a few months. Two weeks later he moved to the geological laboratory in the Jusepín oil camp, where he studied the Oligo-Miocene microfaunas of the Maturín sub-basin. After applying and adapting the pelagic foraminiferal zonation of Trinidad to the Oligocene of northern Monagas. Dr. Stainforth left Jusepín to spend two weeks with colleagues in Trinidad before returning to his base at Talara.

He continued working for the International Petroleum Company at Talara into 1954, and then for the Carter Oil Company at Billings, Montana, U.S.A. in 1955-57.

In 1957, he returned to Venezuela on contract with Creole Petroleum Corporation again as head of the stratigraphic laboratory at Jusepín, effective November 1st. In this role Dr. Stainforth, beyond the identification of fossils, devoted himself to trying to interpret their stratigraphic significance, always concerned with the application, integration and regional interpretation of his findings.

His most important work in this phase, which had stood the test of time and is currently of great practical use in the exploratory activity of Lagoven S.A., was the zonation established in the Carapita Formation. Dr. Stainforth worked on samples from the type section in the Quebrada Carapita, State of Anzoátegui, determining ages from Early to Middle Miocene. He worked in the subsurface, where this formation consists almost wholly of dark grey to black calcareous shales with a high content of foraminifera indicative of Oligocene to mid-Miocene age.

He established the following zones (older to younger):

- *Globigerina ampliapertura*
- *Globorotalia opima opima*
- *Globigerina ciperoensis ciperoensis*
- *Globorotalia kugleri*
- *Catapsydrax dissimilis*
- *Globigerinatella insueta*
- *Catapsydrax stainforthi*
- *Globorotalia fohsi*
- *Globorotalia mayeri*
- *Globorotalia menardii*

He described sequences of facies-faunas, “faunules”, which reflect changes of ecological factors and have no intrinsic age significance. He designated the deposits of greatest water depth the “Cipero facies” from their similarity to the Cipero Formation on the nearby island of Trinidad. For deposits in depths from 70 to 1000 fathoms (a unit of length in the imperial and the U.S. customary systems equal to 6 feet, 1.8288 m). Dr. Stainforth had used the term “normal Carapita faunule”. The two shallow-water assemblages were denominated the “*Bolivina-Cibicides-Uvigerina*” and the “*Robulus-Eponides*” faunules.

He went to work in Maracaibo, Zulia State, where he made extensive studies of the Eocene of Maracaibo Lake.

After that, Creole Petroleum Corporation transferred him to the head office in Caracas to work in the regional-studies group. This was perhaps his period of greatest creativity, when he not only published articles on stratigraphy, but also began to introduce themes such as diastrophism, continental drift, sea-floor spreading, etc. so that he became a pioneer of his time.

Dr. Stainforth was a micropaleontologist and stratigrapher best known for his innovative work on the application of planktonic foraminifera to worldwide stratigraphic correlation. His work was based on the microfauna and stratigraphy of South America, especially as related to petroleum geology.

His colleagues remember Dr. Stainforth as, above all, a worker and a writer, never far from his old typewriter. Any idea, short article or report would be typed several times to be passed around among his colleagues so as to interchange opinions and thus generate research projects. He was always addressed as “Charlie” and we have the word of Drs. Winkler, Furrer and León that he did not respond to his surname and that his second name is not even recorded in the company files. When he presented papers, equally in

Venezuela and abroad, he signed them simply “R. M. Stainforth”. He had a characteristic gesture of entwining his index and middle fingers in an up-and-down “V” motion when consulted or asked about anything.

Dr. Stainforth major accomplishment was his pioneering work on the potential of planktonic foraminifera as ideal tools for worldwide correlation of Mesozoic and Tertiary strata. His many important papers and talks related to this subject and his anticipation of future developments had a lasting impact on much of the Tertiary stratigraphical work carried out for decades after.

Upon his retirement in 1969 he moved with his wife Anne to Victoria, British Columbia, Canada.

Dr. Stainforth died where he had chosen to retire, in Victoria, Vancouver Island, British Columbia on September 30, 2002



### **Planktonic foraminiferal zones dealt with by Dr. Stainforth**

Named in stratigraphic order, Dr. Stainforth described the following zones with planktonic foraminifera:

- **Cushman & Stainforth (1945)** referred to the range-zones of *Globigerina concinna*, *Globigerinatella insueta* and *Globorotalia fohsi*. Zonation of the interval has been greatly refined, but these units are still discernible in the modern schemes — for instance Bolli & Saunders (1985). Their age-range has been revised as Oligocene to mid-Miocene.
- **Stainforth (1948)** referred to the interval above extinction of *Globorotalia fohsi* as the *Globorotalia menardii* Zone. Bronnimann (1951) modified its definition and later

authors have divided *G. menardii sensu lato* into many distinct forms. Age of this zone has been revised from early to late Miocene.

- **Stainforth et al. (1975)** mainly accepted zones erected by other authors but made some minor modifications.

## **Foraminifera described by Dr. Stainforth**

### **Planctonic foraminifera**

- *Globigerinatella* Cushman & Stainforth, 1945
- *Globigerinatella insueta* Cushman & Stainforth, 1945
- *Globigerinatella insueta* Cushman & Stainforth emend. Hofker, 1954
- *Globorotalia praemenardii* Cushman & Stainforth, 1945.

### **Benthic foraminifera**

- *Anomalina alazanensis* Nuttall var. *spissiformis* Cushman & Stainforth, 1945.
- *Annulopatulina advena* Cushman & Stainforth, 1945.
- *Ammovertella retrorsa* Cushman & Stainforth, 1945.
- *Cassidulina caudriae* Cushman & Stainforth, 1945.
- *Chrysalogonium asperum* Cushman & Stainforth, 1945.
- *Chrysalogonium ciperense* Cushman & Stainforth, 1945.
- *Discorbis ciperensis* Cushman & Stainforth, 1945.
- *Dorothyia brevis* Cushman & Stainforth, 1945.
- *Ellipsoglandulina robustior* Cushman & Stainforth, 1945.
- *Ellipsolagena barri* Cushman & Stainforth, 1945.
- *Entosolenia acuta* (Reuss) var. *bisenta* Cushman & Stainforth, 1945.
- *Entosolenia crenulata* (Coryell & Rivero) var. *multispinata* Cushman & Stainforth, 1945.
- *Entosolenia flintiana* (Cushman) var. *indomita* Cushman & Stainforth, 1945.
- *Entosolenia flintiana* (Cushman) var. *plicatura* Cushman & Stainforth, 1945.
- *Entosolenia kugleri* Cushman & Stainforth, 1945.
- *Entosolenia pannosa* Cushman & Stainforth, 1945.
- *Entosolenia spinolaminata* Cushman & Stainforth, 1945.
- *Gaudryina pseudocollinsi* Cushman & Stainforth, 1945.
- *Globorotalia praemenardii* Cushman & Stainforth, 1945.
- *Gyroidina altispira* Cushman & Stainforth, 1945.
- *Gyroidina complanata* Cushman & Stainforth, 1945.
- *Gyroidina girardana* (Reuss) var. *perampla* Cushman & Stainforth, 1945.
- *Gyroidina jarvisi* Cushman & Stainforth, 1945.
- *Hormosina glabra* Cushman & Stainforth, 1945.
- *Karrerriella alticamera* Cushman & Stainforth, 1945.
- *Lagena ciperensis* Cushman & Stainforth, 1945.
- *Lagena crenata* Parker & Jones var. *capistrana* Cushman & Stainforth, 1945.

- *Lagena pulcherrima* Cushman & Jarvis var. *enitens* Cushman & Stainforth, 1945.
- *Lagena rutschi* Cushman & Stainforth, 1945.
- *Lagena striata* (d'Orbigny) var. *basisenta* Cushman & Stainforth, 1945.
- *Lagena waringi* Cushman & Stainforth, 1945.
- *Marginulina sublituus* (Nuttall) var. *multicamerata* Cushman & Stainforth, 1945.
- *Nodogenerina rohri* Cushman & Stainforth, 1945.
- *Nodosarella reflecta* Cushman & Stainforth, 1945.
- *Nodosaria lamellata* Cushman & Stainforth, 1945.
- *Orthomorphina rohri* Cushman & Stainforth, 1945
- *Planulina renzi* Cushman & Stainforth, 1945.
- *Plectofrondicularia morreyae* Cushman var. *exigua* Cushman & Stainforth, 1945.
- *Plectofrondicularia nuttalli* Cushman & Stainforth, 1945.
- *Plectofrondicularia nuttalli* Cushman & Stainforth var. *acuta* Cushman & Stainforth, 1945.
- *Plectofrondicularia ruthvenmurrayi* Cushman & Stainforth, 1945.
- *Pleurostomella bierigi* Palmer & Bermúdez var. *hebeta* Cushman & Stainforth, 1945.
- *Pleurostomella praegerontica* Cushman & Stainforth, 1945.
- *Pullenia trinitatensis* Cushman & Stainforth, 1945.
- *Pyrulina cylindroides* (Roemer) var. *curvatura* Cushman & Stainforth, 1945.
- *Rectogumbelina inopinata* Cushman & Stainforth, 1945.
- *Schenckiella suteri* Cushman & Stainforth, 1945.
- *Virgulina ciperana* Cushman & Stainforth, 1945.
- *Vulvulina guppyi* Cushman & Stainforth, 1945.
- *Uvigerina ciperana* Cushman & Stainforth, 1945.
- *Amphistegina ellioti* Cushman & Stainforth, 1946
- *Palmerinella thalmanni* Stainforth & Stevenson, 1946.
- *Planulina wheeleri* Stainforth & Stevenson, 1946.
- *Technitella archaeonitida* Stainforth & Stevenson, 1946.
- *Bulimina secaensis* Cushman & Stainforth, 1947
- *Robulus insuetus* Cushman & Stainforth, 1947
- *Plectofrondicularia dentifera* Cushman & Stainforth, 1947
- *Bolivinopsis pulchella* Cushman & Stainforth, 1947.
- *Buliminellita* Cushman & Stainforth, 1947.
- *Buliminellita mirifica* Cushman & Stainforth, 1947.
- *Bulimina lineata* Cushman & Stainforth, 1947.
- *Bulimina acutangularis* Cushman & Stainforth, 1947.
- *Bulimina decurtata* Cushman & Stainforth, 1947.
- *Plectofrondicularia dentifera* Cushman & Stainforth, 1947.
- *Pullenia duplicata* Stainforth, 1949.
- *Buliminella peruviana* Cushman & Stone var. *obesa* Cushman & Stainforth, 1951.
- *Nonion ecuadoranum* Cushman & Stainforth, 1951.
- *Plectina nuttalli* Cushman & Stainforth, 1951.
- *Pleurostomella ecuatoriana* Cushman & Stainforth, 1951.
- *Psammosphaera eocenica* Cushman & Stainforth, 1951.
- *Pyrgo pseudoinornata* Cushman & Stainforth, 1951.
- *Quinqueloculina orbiculata* Cushman & Stainforth, 1951.
- *Valvulineria eocenica* Cushman & Stainforth, 1951.
- *Valvulineria peruviana* Cushman & Stone var. *discrepans* Cushman & Stainforth, 1951.
- *Orthomorphina* Stainforth, 1952.

## **Species of Foraminifera dedicated to Dr. Stainforth**

Numerous investigators in this special field have paid homage for the future to the work and dedication of Dr. Stainforth in his fruitful professional career. Below are named in chronological sequence some of the species which were named for him:

### **Planktonic Foraminifera**

- *Globigerina stainforthi* Bronnimann, 1952
- *Globigerina stainforthi* Hofker, 1956
- *Catapsydrax stainforthi* Bolli, Loeblich & Tappan, 1957
- *Globigerinita stainforthi* (Bolli, Loeblich & Tappan) subsp. *praestainforthi* Blow, 1969

### **Benthic Foraminifera**

- *Nodosaria stainforthi* Cushman & Renz, 1941
- *Valvulina stainforthi* Cushman & Renz, 1947
- *Sporobulimina stainforthi* Stone, 1949
- *Schenckiella stainforthi* Weiss, 1955
- *Nonionella stainforthi* Hofker, 1956
- Genus: *Stainforthia* Hofker, 1956
- *Stainforthia dalliformis* Hofker, 1956
- *Valvulineria stainforthi* Hofker, 1956
- *Palaeonummulites stainforthi* Eames *et al.*, 1968

## **Publications / Papers**

- 1938** *Uintacrinus westfalicus* (Schlüter) in the Yorkshire Senonian.  
Geologists' Association. *Proceedings*, v. 50, p. 101-104, pls. 10-13.
- 1942** jointly with H.G. Kugler, S.C. Mackenzie, J.C. Griffiths and G.R. Brotherhood:  
Report on exproation for oil in British Guiana.  
Geological Survey British Guiana. *Bulletin* 20, 78 p., illus.
- 1945** J.A. Cushman and RMS:  
The foraminifera of the Ciperio Marl Formation of Trinidad, British West Indies.  
Cushman Laboratory for Foraminiferal Research. *Special Publication*. 14, 75 p., 16 pls.

- 1946** J.A. Cushman and RMS:  
A new species of *Amphistegina* from the Eocene of Ecuador.  
Cushman Laboratory for Foraminiferal Research. *Contributions*, v. 22, p. 117-119, pl. 20.
- RMS and F.V. Stevenson:  
Three new foraminifera from the Tertiary of Ecuador.  
*Journal of Paleontology*, v. 20, p. 560-565, pl. 86.
- 1947** J.A. Cushman and RMS:  
A new genus and some new species of foraminifera from the Upper Eocene of Ecuador.  
Cushman Laboratory for Foraminiferal Research. *Contributions*, v. 23, p. 77-80, pl. 17 (part).
- 1948** Applied micropaleontology in coastal Ecuador,  
*Journal of Paleontology*, v. 22, p. 113-151, 1 fig., pls. 24-26.
- Description, correlation and paleoecology of Tertiary Ciperó Marl Formation, Trinidad, B.W.I.  
American Association of Petroleum Geologists *Bulletin*, v. 32, p. 1292-1330, 2 figs.
- 1949** The Hannatoma fauna in the Zapotal sands of southwest Ecuador.  
*Journal of Paleontology*, v. 23, p. 155, 156.
- Foraminifera in the Upper Tertiary of Egypt.  
*Journal of Paleontology*, v. 23, p. 419-422.
- Nomenclatural notes on *Pullenia* and *Cibicides*.  
*Journal of Paleontology*, v. 23, p. 436-438.
- Work in comfort.  
*The Micropaleontologist*, v. 3, no. 2, p. 29, 30.
- Further notes on Globigerina oozes.  
*The Micropaleontologist*, no. 3, p. 12, 13.
- 1950** Is more concerted effort possible in establishing the regional significance of planktonic foraminifera as indices of geological age?  
*The Micropaleontologist*, v. 4, no. 1, p. 18.
- Types of *Pullenia duplicata* Stainforth.  
*Journal of Paleontology*, v. 24, p. 503?
- Comments on "A pitfall of paleontologic 'Latin'".  
*Journal of Paleontology*, v. 24, p. 504, 505.
- 1951** J.A. Cushman and RMS:  
Tertiary foraminifera of coastal Ecuador: part I - Eocene.  
*Journal of Paleontology*, v. 25, p. 129-164, 4 figs., pls. 25-28.
- Growth of recognition of the zonal value of planktonic microfossils.  
*The Micropaleontologist*, no. 4, p. 30-32.

- 1952** Ecology of arenaceous foraminifera.  
*The Micropaleontologist*, v. 6, no. 1, p. 42-44.
- Classification of uniserial calcareous foraminifera.  
 Cushman Laboratory for Foraminiferal Research. *Contributions*, v. 3, p. 6-14, 1 fig.
- Nodosaria* nomenclature.  
 Cushman Laboratory for Foraminiferal Research. *Contributions*, v. 3, p. 146.
- 1953** The basis of Paleogene correlation in middle America.  
 Soc. Geol. Peru. *Boletín*, v. 26, p. 247-262, 3 figs.
- Globigerina mexicana* Cushman, an Eocene index fossil.  
*The Micropaleontologist*, v. 7, no. 4, p. 23-25.
- RMS and W. Rüegg:  
 Mid-Oligocene transgression in southern Peru.  
 American Association of Petroleum Geologists *Bulletin*, v. 37, p. 568, 569.
- 1954** Comments on the Caribbean Oligocene.  
*Geol. Mag.*, v. 41, p. 175.
- 1955** Ages of Tertiary formations in northwest Peru.  
 American Association of Petroleum Geologists *Bulletin*, v. 39, p. 2068-2077.
- The value of an editorial board.  
*Micropaleontology*, v. 1, p. 93.
- 1956** Meaning of the word stratigraphy.  
 American Association of Petroleum Geologists *Bulletin*, v. 40, p. 2289, 2290.
- 1958** Stratigraphic concepts.  
 American Association of Petroleum Geologists *Bulletin*, v. 42, p. 192, 193.
- 1960** The American Oligocene.  
*Nature*, v. 187, p. 678, 679.
- Estado actual de las correlaciones transatlánticas del Oligo-Mioceno por medio de foraminíferos planctónicos.  
 [Venezuela] *Boletín Geología Publ. Espec.* 3, p. 382-406, 1 fig.
- Current status of transatlantic Oligo-Miocene correlations by means of planktonic foraminifera.  
*Rev. Micropaléontologie*, v. 4, p. 219-230, 1 fig.
- 1961** The Cretaceous/Tertiary and Oligocene/Miocene boundaries in Venezuela.  
 Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 4, p. 256-258.
- 1962** The Upper Eocene of the Guajira Peninsula.  
*Idem*, v. 5, p. 229, 230.
- Definitions of some new Stratigraphic units.  
*Idem*, p. 279-282.



- 1964** Origin of the name Peñas Blancas Formation.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 7, p. 257-259.
- Discussion of the age of the Roraima Formation.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 7, p. 368, 369.
- Subdivision of the Miocene.  
American Association of Petroleum Geologists *Bulletin*, v. 48, p. 1847-1850.
- 1965** RMS and J.A. Sulek:  
Chapapotal Member, new name for Cachipo Member of Carapita Formation.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 8, p. 281, 282, 1 fig.
- 1966** untitled comments in Drooger, C.W., Zonation of the Miocene by means of planktonic foraminifera— a review and some comments.  
Comm. Mediterranean Neogene stratigraphy, 3rd Session, Bern 1964, *Proceedings*, p. 47, 48 (Leiden, E.J. Brill).
- Occurrence of pollen and spores in the Roraima Formation of Venezuela and British Guiana.  
*Nature*, v. 210, no. 5033, p. 292-294, 3 figs.  
also Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 9, p. 173-176, 1 fig.
- A.L. Peirson, III, Amos Salvador and RMS:  
The Guárico Formation of north-central Venezuela  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 9, p. 183-224.
- Gravitational deposits in Venezuela.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 9, p. 277-287, 3 figs.
- Contributions of the A.V.G.M.P. Maracaibo Basin Eocene Nomenclature Committee: I - Introduction.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 9, p. 319-324.
- 1967** E. von der Osten and RMS:  
Current status of stratigraphic names used in central Lara, Appendix to Osten, E. von der, *Stratigraphy of Central Lara*.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 10, p. 323-329.
- 1968** El desarrollo de la terminología estratigráfica en el estado Lara.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 11, p. 243-253.

- 1969** untitled comments in Blow, W.H., Late Middle Eocene to Recent planktonic foraminiferal biostratigraphy.  
1st International Conference on Planktonic Microfossils, Geneva, 1967, *Proceedings*, p. 419, 420.
- Ages of Upper Tertiary and Quaternary formations in Venezuela.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 12, p. 75-90.
- The concept of seafloor spreading applied to Venezuela.  
Asociación Venezolana de Geología, Minería y Petróleo. *Boletín Informativo*, v. 12, p. 257-274, 7 figs.
- Amos Salvador and RMS:  
Clues in Venezuela to the geology of Trinidad, and vice versa.  
4th Caribbean Geological Conference, Trinidad 1965, *Transactions*, p. 31-40, 5 figs.
- Mid-Tertiary diastrophism in northern South America.  
4th Caribbean Geological Conference, Trinidad 1965, *Transactions*, p. 159-174, 9 figs.
- 1970** C. González de Juana, RMS, F. de Rivero, C. Martín Bellizzia and C. Petzall, eds.  
LEXICO ESTRATIGRAFICO DE VENEZUELA (segunda edición).  
[Venezuela] *Boletín Geología Publicación Especial* 4, 756 p., illus.
- 1971** La Formación Carapita de Venezuela oriental.  
*Boletín Geología [Venezuela] Publicación Especial* 5, p. 433-463, 6 figs.
- 1973** Description, correlation and paleoecology of Tertiary Cipero Marl Formation, Trinidad, B.W.I.  
American Association of Petroleum Geologists *Reprint Ser.*, no. 6, p. 63-101, 2 figs.
- 1974** Nomenclature of some large Eo-Oligocene *Globigerinas*.  
*Naturf. Gesell. Basel Verh.*, v. 84, p. 256-264, 1 fig., 2 pls.
- 1975** RMS, J.L. Lamb, Hanspeter Luterbacher, J.H. Beard and R.M. Jeffords:  
Cenozoic planktonic foraminiferal zonation and characteristics of index forms.  
Univ. of Kansas *Paleontological Contributions*, Art. 62, 425 p., illus.
- South American studies of Tertiary planktonic foraminifera/Estudios suramericanos de los foraminíferos planctónicos del Terciario.  
*Revista Española Micropaleontología*, v. 7, p. 363-371.
- P.J. Bermúdez and RMS:  
Aplicaciones de foraminíferos planctónicos a la bioestratigrafía del Terciario en Venezuela.  
*Revista Española Micropaleontología*, v. 7, p. 373-389, 3 figs.
- 1976** J.L. Lamb and RMS:  
Unreliability of *Globigerinoides* datum.  
American Association of Petroleum Geologists *Bulletin*, v. 60, p. 1564-1569, 3 figs.

- 1978** Was it the Orinoco?  
American Association of Petroleum Geologists *Bulletin*, v. 62, p. 303-306, 1 fig.  
  
RMS, J.L. Lamb and R.M. Jeffords:  
*Rotalia menardii* Parker, Jones and Brady, 1865 (Foraminiferida: proposed suppression of lectotype and designation of neotype.)  
*Bulletin of Zoological Nomenclature*, v. 34, p. 252-262, 2 pls.
- 1981** RMS and J.L. Lamb:  
An evaluation of planktonic foraminiferal zonation of the Oligocene.  
Univ. of Kansas *Paleontological Contributions*, Pap. 104, 34 p., 7 figs., 8 pls.  
  
*Globuligerina* Bignot and Guyader, 1971, prior synonym of *Caucasella* Longoria, 1974.  
*Journal of Paleontology*, v.
- 1982** RMS with K. Sztrakos & R. M. Jeffords  
*Globigerina cerroazulensis* Cole, 1928 and *Globigerapsis tropicalis* Blow & Banner, 1962 (Foraminiferida): proposed conservation.  
*Bulletin of Zoological Nomenclature*, vol. 39, pt. 1, March 1982 5 pp.

### **Internal reports within Creole Petroleum Corporation**

- 1953** Micropaleontological study of the subsurface Oligocene in the Greater Jusepín area
- 1953-69** Biostratigraphic reports for wells drilled in the oilfields of Quiriquire, Jusepín and Pedernales and in Lake Maracaibo, especially in the Eocene section
- 1958** Précis of the geology of Trinidad Geology of the Gulf of Paria
- 1959** Re-evaluation of oil prospects of the Gulf of Paria. A refinement of the Carapita zonation (prepared jointly with J. L. Lamb and J. A. Sulek). Estado actual de las correlaciones transatlánticas del Oligo-Mioceno por medio de foraminíferos planctónicos
- 1960** A revised appraisal of Creole's Capacho-Urica area Trinidad oil prospects of the east coast
- 1961** A final evaluation of the Capacho-Urica area
- 1962** Habitat of oil in Eastern Venezuela (in two volumes, prepared jointly with A. Salvador)
- 1964** Creole's heavy oil position and notes on the Tar Belt (in three volumes prepared jointly with F. J. de Joia)
- 1965** Clues in Venezuela to the geology of Trinidad and vice versa (prepared jointly with A. Salvador for presentation at the IV Caribbean Geological Conference, Trinidad, 1965)
- 1968** Eocene stratigraphy of the Maracaibo Basin (prepared jointly with J. A. Sulek)
- 1969** Geology of the Gulf of Venezuela

**1969** Geología general y estratigrafía de la Formación Carapita, Venezuela oriental (prepared for later presentation at the IV Congreso Geológico Venezolano)

### **Asociación Venezolana de Geología, Minería y Petróleo (AVGMP)**

Dr. Stainforth was the soul and the driving force of the bulletin (Boletín Informativo) of the AVGMP. His active membership began in December, 1958 while he was head of the Jusepín laboratory, when G. A. Young was president of the Asociación.

During the nine years from 1961 to 1969 he published articles on a variety of subjects in the bulletin. He was elected its editor at the annual meeting in 1963 and thereafter at successive meetings until 1969.

In August 1966, he gave a talk on the gravitational deposits (also called “secondary” or “tectonic” deposits) in Venezuela and showed how their study can elucidate the history of a region, specifically the Eastern Venezuela Basin. In November, 1967 he gave a brief account of the 4th Mediterranean Neogene Congress and the Planktonic Conference held in Bologna and Geneva, respectively.

At the 1968 annual meeting, Dr. Stainforth was elected president of the Asociación. He expressed his thanks for the honour and his hopes for a fruitful future for the AVGMP. He expressed pleasure that, for the first time, a lady had been elected to the council, namely Dra. María de Lourdes Díaz de Gamero. Dr. Murani, who had been elected the new editor, was unexpectedly transferred to New York and Dr. Stainforth therefore resumed the post of editor “for a short time”, but actually for a whole year.

In January 1969, Dr. Stainforth and Dr. Clemente González de Juana gave a summary of the 5th Caribbean Geological Conference held in the Virgin Islands. In March, 1969, Dr. Stainforth relinquished his posts as editor and president but remained on the council. In July the AVGMP council awarded him a plaque in gratitude for his most valuable work as editor for six consecutive years and as the 1967-68 president.

In chronological order the articles published by Dr. Stainforth in the AVGMP Boletín Informativo are as follows:

**1961** The Cretaceous/Tertiary and Oligocene/Miocene boundaries in Venezuela

**1962** The Upper Eocene of the Guajira Peninsula

Definitions of some new stratigraphic units in Western Venezuela

**1964** Origin of the name Peñas Blancas Formation

Discussion of the age of the Roraima Formation

**1965** Chapopotal Member, new name for Cachipo Member of Carapita Formation (Jointly with J. A. Sulek)

**1966** Occurrence of pollen and spores in the Roraima Formation of Venezuela and British Guiana

The Guárico Formation of North Central Venezuela (jointly with A. L. Peirson and A. Salvador)

Gravitational deposits in Venezuela

Contributions of the AVGMP Maracaibo Basin Eocene Nomenclature Committee (jointly with W. M. Walton)

**1968** La estratigrafía del Eoceno de la Cuenca de Maracaibo. Artículo I, Introducción. In "Publicación especial, No. I".

El desarrollo de la terminología estratigráfica en el Estado Lara

Editorial. Despedida.

**1969** Resúmenes

Informe del presidente sobre el período 1968-1969

Ages of the Upper Tertiary and Quaternary formations in Venezuela

The concept of seafloor spreading applied to Venezuela

### **Venezuelan geological congresses**

Dr. Stainforth took a very active part in the two Venezuelan geological congresses organized during his time in this country. He not only contributed to the preparations, but also took part in the commissions on general geology and stratigraphy.

His published contributions were as follows:

**1960** Estado actual de la correlaciones transatlánticas del Oligo-Mioceno por medio de foraminíferos planctónicos. 25 pp. [12]

**1971** La Formación Carapita de Venezuela oriental. 31 pp.

### **American Association of Petroleum Geologists (AAPG)**

Dr. Stainforth was a member of AAPG since 1941 and published the following works in its Bulletin:

**1948** Description, correlation and paleoecology of Tertiary Cipero Marl Formation, Trinidad. 39 pp.

**1951** Review of "Contribución al estudio del Cenozoico cubano" by Pedro J. Bermúdez. 2 pp.

**1953** Review of “Estudio sistemático de los foraminíferos Rotaliformes” by Pedro J. Bermúdez. 2 pp.

Mid-Oligocene transgression in southern Peru. (Jointly with W. Ruëgg). 2 pp.

Review of “The general and economic geology of Trinidad” by H. H. Suter. 3 pp.

**1955** Ages of Tertiary formations in northwest Peru. 10 pp.

**1956** Meaning of the word Stratigraphy. 2 pp.

**1958** Stratigraphic concepts: a discussion. 1 p.

**1964** Subdivision of Miocene. 2 pp.

**1965** Internal publications on the geology of Venezuela. 6 pp.

**1976** Unreliability of *Globigerinoides* datum. (Jointly with J. L. Lamb). 6 pp.

**1978** Was it the Orinoco? 4 pp,

### **Journal of Paleontology**

Dr. Stainforth had nine articles published in this journal:

**1946** Three new foraminifera from the Tertiary of Ecuador. 6 pp. (jointly with F. V. Stevenson)

**1948** Applied micropaleontology in coastal Ecuador. 39 pp.

**1949** Foraminifera in the Upper Tertiary of Egypt. 4 pp.

Nomenclatural notes on *Pullenia* and *Cibicides*. 3 pp.

The Hannatoma fauna in the Zapotal Sands of southwest Ecuador. 2 pp.

**1950** Types of *Pullenia duplicata* Stainforth. 1 p.

Comments on “A pitfall of paleontologic Latin”. 2 pp.

**1951** Tertiary foraminifera of coastal Ecuador: Part I - Eocene. 36 pp, (jointly with J. A. Cushman)

**1956** Genus *Stainforthia* Hofker. 1 p.

### **The Micropaleontologist**

Dr. Stainforth was the correspondent for Peru, from 1951 through 1954, of the occasional periodical The Micropaleontologist edited by the Department of Micropaleontology at the American Museum of Natural History in New York. In addition to news articles about paleontological activities in Peru, he published short articles with the following titles:

**1949** Further notes on fossil *Globigerina* oozes.

**1950** Is more concerted effort possible in establishing the regional significance of planktonic foraminifera as indices of geological age?

**1951** Growth of recognition of the zonal value of planktonic microfossils

**1952** Ecology of arenaceous foraminifera.

“Personalities” and “Help wanted”

**1953** *Globigerina mexicana* Cushman, an Eocene index fossil.

### **Micropaleontology**

Dr. Stainforth was a correspondent for this journal for more than ten years, in the following stages:

**1955** for the north-central area of the U. S. A.

**1955 – 1957** for the Rocky Mountains region of the U. S. A.

**1962 – 1964** for Venezuela

**1965 1967** for Venezuela and Trinidad

**1968 - 1969** for Venezuela until April, 1969, when with retirement imminent he handed over to Dr. Max Furrer.

### **Acknowledgments**

It would not have been possible to complete this work without the positive and efficient collaboration of Drs. Max Furrer, Virgil Winkler, Vernon Hunter, Hans Bolli and Hernan León, who knew and in most cases were colleagues of Dr. Stainforth, not only in Venezuela but also abroad in other fields of study. The managements of exploration and assessment of the geology department of Lagoven S. A., in the persons of Ramón Gutiérrez and Carlos Sánchez, who supported this well-deserved tribute from the first moment.

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Throughout this article is depicted a whole life dedicated to the study, investigation and deep love of geology. At a time when computers, photocopying facilities did not exist, let alone word-processors and computers for storing data, to simplify correcting and editing, Dr. Stainforth was able to generate all this volume of published papers, internal reports for the companies employing him, and unpublished studies.

This essay only compiles the most important works of Dr. Stainforth and the most relevant details of his outstanding professional career, since making a full summary is virtually impossible, given his boundless creativity, his work mystique, and his lifelong talent of good writing

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