GEORGE STUART GRAHAM-SMITH

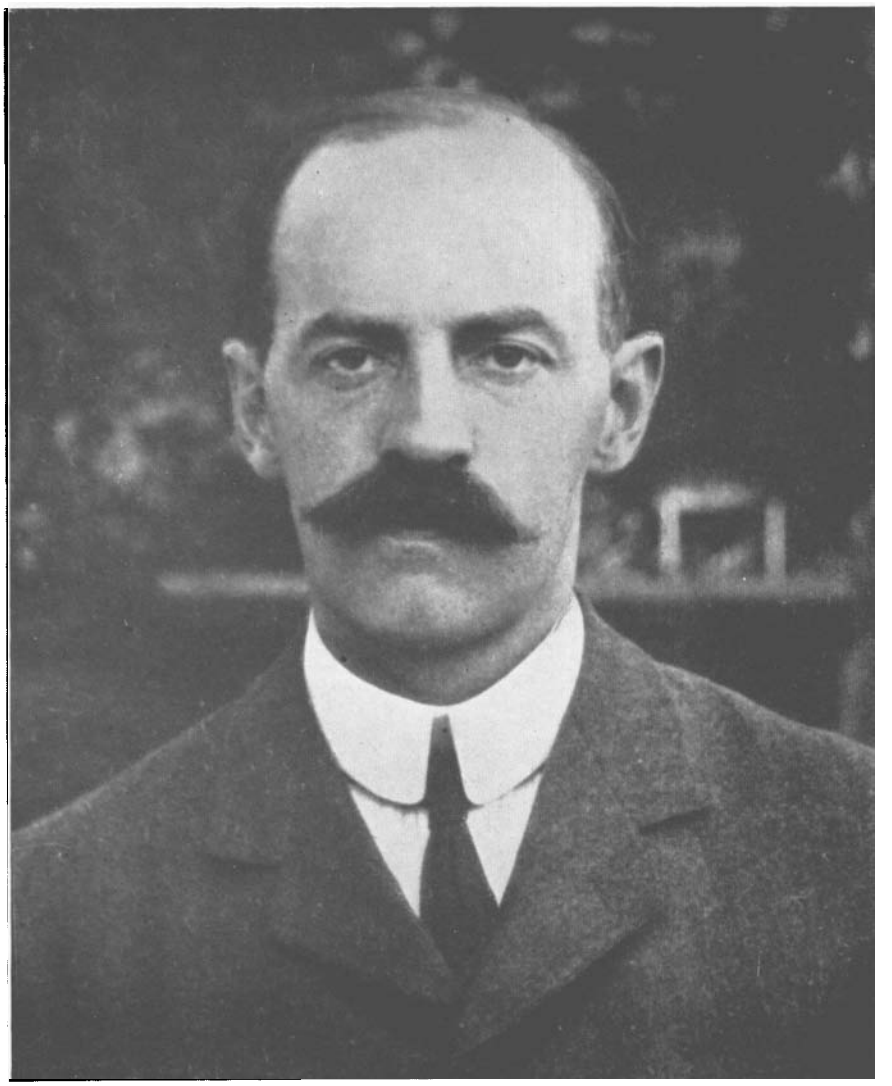
(25 SEPTEMBER 1875–30 AUGUST 1950)

G. S. Graham-Smith was born on 25 September 1875, the son of a colonel in the Indian Army. He expressed a wish, during his life-time and in his Will, that no obituary notices should be published about him, because so few of those with whom he was intimately associated during the most active period of his working life now remain. It has, nevertheless, seemed proper to submit the following account of him, because many friends and students and some contributors or subscribers to the *Journal* who knew him only as editor, will wish to see such details of his life and work recorded.

Graham-Smith's school was Clifton College. Thence he went to Pembroke College, Cambridge, where he was a Scholar and, in 1897, captain of the cricket XI. He was also tried for the University cricket XI as wicket keeper but did not gain his Blue. He obtained first-class honours in Part I of the Natural Sciences Tripos, and stayed up a fourth year to take Part II in Anatomy, in which he obtained second-class honours. One of his interests during this fourth year is said to have been the dissection of a gorilla, which he and his fellow students were able to compare anatomically with their human subjects.

He graduated B.A. in 1897, and then went to Guy's Hospital, where he played more cricket and whence he qualified M.B., B.Chir. in 1901. As soon as he had qualified he returned to Cambridge, to the Department of Pathology, 'to learn a little more about pathology which, with kindred subjects, appealed to (him) more than practice'. The quotation is from his obituary notice of Louis Cobbett, in the *Journal of Pathology and Bacteriology* (1947), in which he tells us of the start of his own career in preventive medicine, as a member of 'a very small advanced class...given by Cobbett'. 'A considerable outbreak of diphtheria was in progress in the neighbourhood, and the class devoted much of its time to observing Cobbett at work, going over cultures from swabs, purifying and identifying organisms from the cultures, observing the effects of inoculation of animals, making media, hearing the reports of the sanitary inspectors on various matters and of the doctors on the effects of antitoxin treatment, following up patients and contacts and keeping records of all such matters.' Soon afterwards, Cobbett was asked to investigate an outbreak of diphtheria at Colchester and invited Graham-Smith to go there as his assistant and to carry on whenever he was absent. 'Next year', continues Graham-Smith, 'with the assistance of Professors Sims Woodhead and Nuttall, who had recently come to Cambridge, he obtained for me the appointment of bacteriologist to the Borough of Cambridge and the surrounding districts. I am therefore almost entirely indebted to him for a start in a scientific career.'

Diphtheria, in those early days of bacteriological diagnosis and antitoxin treatment, was an absorbing topic. Graham-Smith's own studies on diphtheria bacilli continued for many years. In 1908 the Cambridge University Press published



G. S. GRAHAM-SMITH

From Dr Ponder's cricket team group

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The Bacteriology of Diphtheria, by Nuttall and Graham-Smith, the first big work on the subject in this country.

In 1902, Graham-Smith took the Diploma in Public Health, and in 1904 became John Lucas Walker student, one in a distinguished succession. He graduated M.D. in 1905.

During these early years of active research his interest in sport was strong. He continued to play cricket. The following tale is told in his own words: 'In a cricket match between Pathologists and Anatomists in the Long Vacation of 1902, very shortly after the writer had joined the Laboratory, (Professor Sims) Woodhead and he were in together. The latter called for a short run by a motion of the hand and ran keeping his eye on the ball in case another run became possible. On getting near the other wicket and finding Woodhead leaning on his bat and staring at the pavilion he shouted "Run, you...fool, run". Owing to some fielding mistake Woodhead got home. Soon afterwards Woodhead was out, but the writer continued batting an hour or so, wondering all the time what would happen later, for Woodhead's strict views were known. When he was out he retired hastily to the dressing room and very soon Woodhead came in. After offering his congratulations on the writer's innings he said, "In all my life I was never called such names before or, at any rate, with so much justification". This incident began a life-long friendship.'

Graham-Smith also took to golf, and became a first-class player, and a foundation member of the Gog Magog golf club. He won the Rolfe Challenge Trophy of the R.W.N.G.C. three times, in 1905, 1906 and 1908. He and Cobbett were also enthusiastic cyclists, and he had some good tales of their rides together.

In September 1910 he married Violet Leith-Ross, of Arnage, Aberdeenshire.

In 1907, a year after Nuttall had become Reader in Hygiene, Graham-Smith was appointed University Lecturer in Hygiene, which post he held until 1923, when he became Reader in Preventive Medicine.

His working association with Nuttall began shortly after his return to Cambridge, and in 1904, when Nuttall's famous *Blood Immunity and Blood Relationships* appeared, Graham-Smith contributed to it Section VIII, entitled 'Blood relationship amongst the lower vertebrata and arthropoda, etc., as indicated by 2,500 tests with precipitating antisera'.

Without doubt, in the intimate atmosphere of the Department, collaboration on all kinds of subjects took place between members of the staff. Another interest shared by Nuttall and Graham-Smith related to insects, especially considered as vectors of disease. In 1899 Nuttall had published an important review *On the rôle of Insects, Arachnids and Myriapods as Carriers in the Spread of Bacterial and Parasitic Diseases of Man and Animals.* Many were stimulated by this work, among them Graham-Smith, who early began work on flies as vectors of disease, and made the topic his own. Of more than sixty scientific papers which he published during his career, nineteen were devoted to flies. In 1913, the Cambridge University Press published the first edition of his book *Flies in Relation to Disease. Non-Blood-Sucking Flies*; a second edition was called for in the following year. This book belonged to a series, the Cambridge Public Health Series, of which Graham-Smith was editor with J. E. Purvis.

A feature of his many papers on flies is the abundance of beautifully executed drawings with which he illustrated them. His knowledge of the art of making such drawings and preparing them for the press stood him, and many of the contributors to the *Journal of Hygiene,* in good stead when he became editor.

Graham-Smith's interest in flies remained for life. He enjoyed talking about flies, and would describe their behaviour with a sympathetic relish which was inimitably diverting. During his last year, perhaps as a kind of relief from his more serious historical writing, he compiled a short anthology of poems, chiefly classical or of the nineteenth century, dealing with the character of the house-fly. The item which pleased him most and caused him much laughter was 'From the fly's point of view', by Barry Pain.

Graham-Smith's very important earlier scientific work was recognized in 1919 by his election to the Fellowship of the Royal Society. By 1938 he had published over sixty scientific papers, their topics including general bacteriology, diphtheria, precipitins, protozoal diseases, flies in relation to disease and animal diseases.

In the war of 1914–18, he conducted a course in bacteriology for non-medical scientists, to enable them to help in war-time laboratories. One who attended this course remembers it as a very stimulating experience. At about this time he worked with F. W. Foreman of the School of Agriculture on methods of treating corpses to prevent them from becoming offensive. He continued to collaborate with Foreman after the war on other subjects.

Throughout his working life in the Department of Pathology in Cambridge, until he reached the age for retirement from his Readership in 1940, Graham-Smith was an active teacher. At first he helped in the course for the Diploma in Public Health and the Long Vacation course, in which he taught with Sims Woodhead, Nuttall, Cobbett, Strangeways, Shipley and others. Later, he assumed full charge of the D.P.H. bacteriology, while continuing to teach in the Long Vacation or 2nd M.B. course. When pathology was introduced by Prof. H. R. Dean into Part II of the Natural Sciences Tripos in 1924, Graham-Smith undertook all the bacteriological teaching proper, except certain lectures and classes on tuberculosis which were given by Cobbett. The Department at that time was housed in the building which has now been converted into the zoological laboratory, on the corner of Downing Street and Corn Exchange Street. Graham-Smith's lectures were memorable. He had the art of presenting his subject as a series of stories, delivered with a dry wit and meticulous accuracy. In his practical classes full instructions were written on the blackboard before the class, so that he was free during the period to devote himself to individual demonstration. Many of his classes were illustrated with beautifully made microscopic preparations.

After about 1928 his teaching was limited to a few special lectures on such subjects as plague and cholera and, of course, insect vectors. These lectures in particular were enjoyed by all who heard them; and they used to be attended by many of the research and teaching staff and, in later years, by the staff of the Public Health Laboratory Service as well as by the Part II students for whom they were primarily given.

Besides teaching and research, administrative duties occupied much of Graham-Smith's time. From 1907 to 1919, he was assessor to the Regius Professor of Physic, in those days Sir Clifford Allbutt. From 1919 to 1933 he was Secretary to the Faculty Board of Medicine, of which he remained a member for some years. A subsequent Secretary of the Board writes: 'He was one of the most useful members of the Board because of his long association with it and his intimate knowledge of University procedure. He viewed the decisions of the Board against the wider background of University development.'

The history of the development of the University, and especially of the Medical School, was a subject to which he devoted much time and research. A most valuable product of his labours in this direction is the collection of pictures, now on the walls of the Department of Pathology, illustrating the growth of the School and the lives of many of those who built it. In addition, he collected several volumes of material relating to the history of the Department of Pathology. These will be preserved in the University Library, and a copy of them kept in the Department of Pathology.

It is perhaps not now generally remembered that Cambridge instituted the first Diploma in Tropical Medicine and Hygiene, as well as the first Diploma in Public Health, originally the Diploma in Sanitary Science. The D.T.M. and H. was introduced in 1904, at the instigation of Nuttall and of Sir Patrick Manson, and continued until 1933, when 'the establishment of a diploma in connexion with the London School of Hygiene and Tropical Medicine rendered its continuance unnecessary'. The Cambridge diploma was managed by a Subsyndicate for Tropical Medicine, of which Graham-Smith was secretary.

Graham-Smith's connexion with the *Journal of Hygiene* probably dates from its first number, for he returned to Cambridge and commenced his association with Nuttall in 1901, the year of the *Journal's* foundation. From the picture which he has left of the Department in those days, one may fairly guess that Nuttall would have discussed his new *Journal* freely with his junior colleague. In 1912 Graham-Smith's association with the *Journal* was indicated by the inclusion of his name among those which appear on the cover of the *Journal* as acting 'in conjunction with' the editor.

After Nuttall's death, and after Okell's very short tenure of the office, Graham-Smith became editor in March 1939. He undertook the editorship with characteristic modesty regarding his own role, and always regarded the work of maintaining the highest possible standard as a duty which he owed to the memory of Nuttall. One of his first editorial activities was to compile from Nuttall's notes, in conjunction with Prof. D. Keilin, an article entitled 'Notes on the preparation of papers for publication in the *Journal of Hygiene* and *Parasitology* by the late G. H. F. Nuttall, M.D., Sc.D., Ph.D., LL.D., F.R.S.' (*Journal of Hygiene*, vol. **44**, p. 1, 1940). In this article, which in its final form was chiefly written by Graham-Smith, there is much information of value to authors and to editors; the paper may be taken as the canon of future editors of the *Journal*.

Many of those whose papers were published in the *Journal* during Graham-Smith's editorship will have, as the present writer has, vivid memories of the help he gave.

He was prepared to take unlimited trouble to help an author, especially a young author whose experience of paper-writing was small, to shape each paragraph, table and figure as clearly as it could be shaped. He would help by criticising the meaning and relevance of words and passages, by re-drawing figures, or explaining at length how they should be re-drawn; and all this help was given with diffidence, and interlarded with anecdote and quotation. He would never recognize his own literary ability, which was considerable and sensitive. Of it, he once wrote: 'I realize how little I know and that I have neither the faculty of adding correlative detail to give an appearance of verisimilitude to bald and otherwise uninteresting statements nor can I make "The cothurns tread majestic down the deep iambic lines and the rolling anapaestics curl like vapour over shrines".' He had a wide and diverse knowledge of many things and of many men and their writings, and this knowledge, disciplined by a passionate love of accuracy in all things, made him a fine writer and critic.

But his chief genius as an editor lay less in his own power of writing than in his ability to encourage his contributors to develop and display their own.

His last years were made difficult by ill-health. He was never a man to pay much attention to his physical comfort. He bicycled about Cambridge in the coldest weather without gloves or overcoat. A year or two ago, he was knocked off his bicycle and suffered from a badly sprained ankle, but when exhorted to have it attended to, he would say that he knew it was not fractured, because he had broken eight of his bones at one time or another, and knew what a fracture was like.

In spite of difficulty in getting about, his last months were filled with hard work. He continued to edit the *Journal* up to the end, and left its affairs completely up to date, with all records in perfect order. He was also working on the compilation of his history of the Department of Pathology, on the anthology on 'The character of the house fly', already referred to, on the *Account of the Journal of Hygiene*, and on a history of entomology up to the middle of the nineteenth century.

He would not have wished his last years to be stressed in a biographical notice, because the part of his life which he regarded as really of interest comprised the active first twenty years or so of the century, when he was working hard in a rapidly developing subject with senior men who earned his lasting admiration and loyalty. Our picture of those years is inevitably incomplete; for most of it we must depend on his own writings about Nuttall and Cobbett, and the unpublished histories which he has left.

He died suddenly at his home in Cambridge on 30 August 1950, and is survived by Mrs Graham-Smith and by his son.

Graham-Smith belonged to a generation of scientists whose range of interests was wide. As amateurs he and his wife were for many years keenly interested in archaeology; they collected flint implements and other material from sites in many parts of Britain, and gave much thought to the implications of their finds. In later years he was interested in geology and, in collaboration with his son, collected fossil fishes from the Old Red Sandstone in Scotland. He also studied the subsoil in the neighbourhood of his home. Butterflies, parasitic Hymenoptera

and other insects not related to disease shared his attention, as did diseases of wild animals. He published papers on grouse disease and on the Isle of Wight disease of bees. Early in his career he described a protozoon parasite of the mole which is named *Grahamella* after him.

A factual dated account of what a man did is legitimate record, but it leaves untold much of the man himself. No one can draw a complete and truthful word picture of another man, especially of one many years his senior. To select may be to falsify; but there are certain characteristics of Graham-Smith, recognizable by all who knew him well, which may be recounted without risk of inaccuracy, and which should be recounted as historical record not less valuable than events and dates.

Graham-Smith had developed by games and by work his fine natural precision of hand and eye, evident alike in his skill at ball games and in his dissections and drawings. He had a remarkably fine visual memory. For example, a companion writes that 'after motoring two or three times from Cambridge to Aberdeenshire it is hardly an exaggeration to say that he would know every turn, hedge and house before reaching them, and this apparently without any conscious effort'.

The same faculty of quick and detailed visual impression made him a first-rate naturalist. During his last months, when his days were spent in his study, he wrote about a crested tit family which he was watching in the garden. At the same time he occupied himself with observations on hover flies. He also gave an amusing and vivid account of a battle between his cat and an owl. Even the blue-bottles in the creeper outside his window came in for a share of close observation. His flair for natural history started in early youth. When quite young, he took an intelligent interest in a fellow fly fancier, a toad in the Bristol Zoo, which seems to have moved at about the hundredth of a snail's pace and occasionally flashed out its tongue like lightning to secure a fly.

His faculty for quick and accurate observation was linked with a most happy gift for recounting what he had seen. Episodes like those of the cat and the owl, or many relating to flies, which to the average man would have been hardly remarkable, when he recounted them in terse and very non-technical language, became diverting and often frankly funny.

History attracted him strongly, especially the history of ideas and how they came to the men who formulated them. An ambition which he pondered in his later years was to write a book about the 'pioneers' in bacteriology and public health, in which their work would have been presented against a background of the knowledge of their day, so as to reveal their difficulties and the ways in which they made their discoveries.

To those whom he taught he was himself a pioneer, carried forward by the unending adventure of disciplined speculation about accurate observations. The lessons which he taught were those of firm loyalty, of unlimited patience coupled with a power of intense concentration on the business of the moment, of great personal modesty, of the art of giving other people's problems precedence over one's own, and, perhaps most important of all, that few subjects are too serious to be treated with humour.

G. S. GRAHAM-SMITH

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[The writer of this note is indebted to many friends for their contributions and advice, but especially to Dr R. Williamson and Dr W. Graham-Smith. The two photographs are enlarged from groups, one taken in 1910, the other in 1927.]

E. T. C. SPOONER

List of Scientific Publications by

G. S. GRAHAM-SMITH, M.A., M.D., B.Chir., D.P.H., F.R.S.

(1) COBBETT, L. & GRAHAM-SMITH, G. S. (1902). Report on measures taken to check the outbreak of diphtheria in Colchester in 1901. Borough of Colchester.

(2) GRAHAM-SMITH, G. S. (1902). The measures taken to check the diphtheria outbreak of 1901 at Colchester. *J. Hyg., Camb.*, **2**, 170.

(3) GRAHAM-SMITH, G. S. (1903). The distribution of the diphtheria bacillus and the bacillus of Hofmann in the throats of 'contacts' and normal persons. *J. Hyg., Camb.*, **3**, 216.

(4) GRAHAM-SMITH, G. S. (1903). The micro-organisms in the air of the House of Commons. *J. Hyg., Camb.*, **3**, 498.

(5) GRAHAM-SMITH, G. S. & SANGER, F. (1903). The biological or precipitin test for blood considered mainly from its medico-legal aspect. *J. Hyg., Camb.*, **3**, 258.

(6) GRAHAM-SMITH, G. S. (1903). The biological or precipitin test for blood, considered mainly from its medico-legal aspect. II. *J. Hyg., Camb.*, **3**, 354.

(7) GRAHAM-SMITH, G. S. (1904). Blood-relationship among the lower vertebrata and arthropoda, etc., as indicated by 2500 tests with precipitating antisera. Section VIII, pp. 336–80, in *Blood Immunity and Blood-Relationships*, by G. H. F. Nuttall. Cambridge University Press.

(8) GRAHAM-SMITH, G. S. (1904). A study of the virulence of the diphtheria bacilli isolated from 113 persons, and of 11 species of diphtheria-like organisms, together with the measures taken to check an outbreak of diphtheria at Cambridge, 1903. *J. Hyg., Camb.*, **4**, 258.

(9) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1905). Canine Piroplasmosis. II. *J. Hyg., Camb.*, **5**, 237.

(10) GRAHAM-SMITH, G. S. (1905). Canine Piroplasmosis. III. Morbid Anatomy. *J. Hyg., Camb.*, **5**, 250.

(11) GRAHAM-SMITH, G. S. (1905). A new form of parasite found in the red blood corpuscles of moles. *J. Hyg., Camb.*, **5**, 453.

(12) GRAHAM-SMITH, G. S. (1906). The action of diphtheria and diphtheria-like bacilli on various sugars and carbohydrates. *J. Hyg., Camb.*, **6**, 286.

(13) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1906). Canine Piroplasmosis. V. Further studies on the morphology and life history of the parasite. *J. Hyg., Camb.*, **6**, 586.

(14) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1907). Canine Piroplasmosis. VI. Studies on the morphology and life history of the parasite. *J. Hyg., Camb.*, **7**, 232.

(15) GRAHAM-SMITH, G. S. (1907). A cystic disease of the heart, gizzard and muscles of young grass parakeets (*Psittacus undulatus*) due to a protozoan parasite. *J. Hyg., Camb.*, **7**, 552.

(16) GRAHAM-SMITH, G. S. (1907). Some observations on 'Swollen Head' in turkeys. *J. agric. Sci.* **2**, 227.

(17) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1907). *The Bacteriology of Diphtheria.* Cambridge University Press.

(18) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1908). The mode of multiplication of *Piroplasma bovis* and *P. pitheci* in the circulating blood compared with that of *P. canis* with notes on other species of *Piroplasma*. *Parasitology*, **1**, 134.

(19) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1908). Notes on the drug treatment of canine piroplasmosis. *Parasitology*, **1**, 220.

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(21) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1909). *Theileria parva*: attempts at cultivation. *Parasitology*, **2**, 208.

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(23) NUTTALL, G. H. F. & GRAHAM-SMITH, G. S. (1909). Note on immunity in canine piroplasmosis. *Parasitology*, **2**, 215.

(24) GRAHAM-SMITH, G. S. (1909). Preliminary note on the examination of flies for the presence of colon bacilli. *Rep. loc. Govt Bd publ. Hlth*, N.S., no. 16, p. 9

(25) GRAHAM-SMITH, G. S. (1910). The division and post-fission movements of bacilli when grown on solid media. *Parasitology*, **3**, 17.

(26) COBBETT, L. & GRAHAM-SMITH, G. S. (1910). An investigation of the pathology of 'Grouse Disease'. *J. Hyg., Camb.*, **10**, 1.

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(31) GRAHAM-SMITH, G. S. (1911). *House Flies*, p. 205. Bedrock.

(32) COBBETT, L. & GRAHAM-SMITH, G. S. (1911). The passage of bacteria from the mouth to the lungs. *Proc. Camb. phil. Soc.* **16**, 125.

(33) GRAHAM-SMITH, G. S. (1911). Some observations on the anatomy and function of the oral sucker of the blow-fly (*Calliphora erythrocephala*). *J. Hyg., Camb.*, **11**, 390.

(34) GRAHAM-SMITH, G. S., FANTHAM, H. B., PORTER, A., BULLAMORE, G. W. & MALDEN, W. (1912). Report on the Isle of Wight bee disease (*Microsporidiosis*). *J. Bd Agric.*, Suppl., no. 8, pp. 1–143. § I. Introduction by G. S. G-S.: p. 5. § IV. Relation of *Nosema apis* to the Isle of Wight Disease by G. S. G-S., H. B. F. and A. P.: p. 39. § VI. Experimental infection. G. S. G-S.: p. 81. § VII. The ways in which the disease may be spread. G. S. G-S. & G. W. B.: p. 95. § X. Treatment and Prevention. G. S. G-S. & G. W. B.: p. 125. § XI. Infection of other Hymenoptera. G. S. G-S.: p. 131.

(35) GRAHAM-SMITH, G. S. (1912). An investigation of the incidence of the micro-organisms known as non-lactose fermenters in flies in normal surroundings and in surroundings associated with epidemic diarrhoea. 41*st Rep. med. Offr. loc. Govt Bd*, Appendix B, no. 4, p. 304.

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(42) FOREMAN, F. W. & GRAHAM-SMITH, G. S. (1917). Investigations on the prevention of nuisances arising from flies and putrefaction. *J. Hyg., Camb.*, **16**, 109.

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(54) GRAHAM-SMITH, G. S. (1930). Further observations on the anatomy and function of the proboscis of the blow-fly, *Calliphora erythrocephala*. *Parasitology*, **22**, 47.
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