THE
# MATHEMATICAL GAZETTE.

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LONDON:
G. BELL AND SONS, LTD., PORTUGAL STREET, KINGSWAY,
AND BOMBAY.

VOL. XI. JULY, 1923. No. 165.

## A GREAT SCHOOLMASTER.

RAWDON LEVETT was, as was well said in the *Times*, a schoolmaster of genius; he was among the greatest teachers of his time. He died on February 1st at his home in Colwyn Bay at the age of seventy-nine.

After taking his degree as Eleventh Wrangler in 1865, he went for a short time to Rossall, but soon left to become mathematical master at King Edward's School, Birmingham, and here he did his life's work. He became Second Master, and refused for health reasons the Head Mastership which was pressed upon him. He retired from his work about twenty years ago. With him passed away the last of a great triumvirate: Vardy, Hunter Smith, Levett, masters of outstanding ability who not only made their mark upon the great school—where Lightfoot, Westcott and Benson had been taught—but added richly to the noble inheritance of honour which they had received.

Levett's name was very widely known to the last generation through the graceful words with which John Henry Shorthouse dedicated *John Inglesant* to him:

MY DEAR LEVETT.

I dedicate the volume to you that I may have an opportunity of calling myself your friend. J. HENRY SHORTHOUSE.
1880.

*John Inglesant* has now become a classic, and as such is read in many an Upper Form, but Mr. Levett's work is the more abiding, and is

> As the sweet presence of a good diffused,
> And in diffusion ever more intense.

It is difficult to measure the ever widening influence of a great schoolmaster; testimony to it is one of the profoundest and most far-reaching influences in our national life: and how inspiring was Levett's influence is borne from the fact that Shorthouse singled him out from among his many friends to dedicate his first and greatest work to him.

And what was it that made him so great? Just a gift, the wonderful gift of personality—the only educating factor in any schoolmaster. Organisation may be good, material aids may be good, but the only thing which makes a



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lasting impression and which lifts the teaching in any class-room into a plane above the average is the personality of the teacher. The teacher is the school for the highest purposes of education. It is the memory of him, not of what he said or did, but of what he was that is the source of life and inspiration in his pupils.

When Levett went to King Edward's School, the mathematics were at a low ebb. There were some 400 boys, and he was the only mathematician on the staff; other men taught mathematics, but of them the first part of the famous saying was true, "I know nothing of mathematics; I never even taught it." Levett so arranged that all work other than arithmetic was begun by himself: he initiated boys into algebra and geometry: from the very first he laid the utmost stress upon the doing of geometrical riders,—with all his powers he encouraged boys to make that initial effort, after which all other efforts are comparatively easy, to do their first rider, and how delightful was his pleasure in their success. He had, however, to create an atmosphere in which the growth of mathematics could be fostered. It was a severely classical school into which he had come, proud of its tradition for classical scholarship, its records would bear comparison with those of any school—five of its old pupils had not very long before been Senior Classics in six consecutive years. There were only some sixty boys learning any mathematics other than arithmetic, and only one now and then doing anything more than the merest elements of algebra and geometry. When he left a large part of the school was doing mathematics of an advanced type, year after year his old pupils had been gaining Trinity and other scholarships, the last two Senior Wranglers were King Edward's School boys. But he would have been the very last to set himself to improve his side of the school work at the expense of any other; he believed in mathematics as an instrument of education destined to uplift the intellectual standard of every side of school work. He scorned the examination test, and poured out upon it some of the expressions of his greatest contempt—but of that a little later—though he was not at all averse at first from making use of the stimulus of an examination to create an interest in his subject.

In his early days he persuaded the then Head Master to institute an arithmetic examination for the whole school. He set two graduated papers for the 400 boys. About a week after the examination the result in order of merit was read out to the whole school assembled in the Great School Room. This stimulated interest and keenness, and gradually fostered that growth which he set himself to bring about. Later on, when he had a mathematical staff and a mathematical organisation, this examination was dropped; but it will be interesting to mathematical readers to know that from the first his papers in arithmetic were divided into two distinct parts, the first part was the ordinary type of paper, the second the longer and more important part upon which he laid great stress, consisted entirely of questions on fundamental principles; reasons, explanations were asked for, there were no sums to be worked out. Arithmetic was regarded as a science depending upon law. I have never come across other papers quite like these.

As time went on his influence did its work—he won over the Governors to his side, he obtained a mathematical staff, and the school was fully organised for mathematical teaching; and thus far he knew at last that some of his work was done. One of the things he asked me a short time before his death was about the organisation at the old school; there was an anxious look in his piercing eyes as he turned to ask the question, and a wonderful relief as I assured him that nothing was altered, the work which he had begun was still being carried on with the same ideals as he had left it.

And what made the effect of his teaching so deep and lasting was the impression he left upon his pupils that they were his fellow-workers and must help him: that it was "not what a man does which exalts him, but what he

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aspires to do." Endeavour to him was everything, success was naught—though success came. He encouraged every effort with a joy which was contagious; and even though he might have to give the same explanation over and over again, he would say, "You are quite right, do not leave this difficulty till you understand." I have already said with what scorn he regarded work merely for an examination—if a thing was worth doing it was worth doing for its own sake, it is work for work's sake that is needed; he used to refer contemptuously to that type of work "which collects knowledge to pour it down the sink of an examination"; he would have nothing to do with such special classes as the Army class, etc.—organisations which were to him the absolute negation of all true educational ideals. On one occasion he asked a boy at the beginning of the September term if he would care to revise for his Trinity Scholarship Examination in the following December; the boy's ready answer, "No, I will take it in my stride," delighted him. It was Levett's ideal. It illustrates the confidence which his teaching had inspired.

When he had been a short time in Birmingham, the Head Master told him that he wished the school to be examined by examiners from Oxford and Cambridge, and asked him to select some Forms to send in. Levett said he proposed to send in the first, the middle and the last boy from every Form; "this would give a correct impression of the work which was being done"; the Head Master replied that was not at all what he wished; and Levett definitely refused to have anything to do with the selection of boys, and in the contest between the two the Head Master did not win.

This is not the place to do more than mention that everyone of the varied school activities was deeply indebted to him: he started the School Club which controls the games, the sports, the debating, the music, the literary and other societies, and was its president for many years. His was the master spirit which led to the purchase of the playing fields. He contributed liberally to every effort which would broaden outlook and deepen the sense of *esprit de corps*. Eventually the fortune which he left is to go to help the scholarship and games of the school which he loved. I need not refer to the great work he did in connection with the Old Boys' Club; its marked success is largely due to him, to his sympathy, encouragement and guidance. It is destined to play an important part in the wider life of the city. With all this he had time for outside interests, and not only in Birmingham; he was one of the founders of the Association for the Improvement of Geometrical Teaching—now the Mathematical Association—he was its secretary for many years, the difficult years of its early growth—later on he became a Vice-President.

But to return to King Edward's School. His influence over the whole school was profound, and to those who knew him well he has been the spring of life. He wanted his boys to be true, to live true lives; he tried to make them feel the dignity of work and the responsibility of power. He saw in a great school placed in the centre of a great city a unique opportunity, not merely for the imparting of information, which according to Bishop Butler is the least part of education, but for the uplifting of the whole of the corporate life; he saw that from it could come the realisation that true education is a spiritual activity, without which rich men are really poor, and that this activity must find its expression in the translation of energy from one noble purpose to another, and that in faithful labour, done to the best of one's powers, lies the chief joy and the chief power in life.

I cannot conclude this brief record without quoting from the testimonials which his colleagues and old pupils gave him when he retired.

The former, in a farewell letter accompanying a beautiful gift, write:

"For your successful efforts in the promotion of scholarship, your beneficial influence on the growth of character, your judicious encouragement of healthful pastimes, your pupils of all ages and conditions have ever eagerly accorded you the tribute of their affectionate regard.

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"We, for our part, are glad to acknowledge our especial obligation to you as an example of qualities, which, essential as they are to the genius of the teacher, do not lie within the compass of every schoolmaster. Devotion to duty, unselfishness of purpose, a frank and kindly humour, an unfailing sense of justice—these qualities harmonising with a generous and cultured humanity, have, throughout your career, dignified and sweetened your association with your fellow-workers, and have, moreover, unobtrusively afforded a salutary stimulus to their zeal in the cause of education."

The old boys collected a large sum of money for a gift for him, but at his wish it was spent on the School. I will quote from the letter which was signed by many hundreds:

"We cannot easily express our sense of all that we owe to you, and of the loss which the School sustains by your withdrawal from its daily life.

"Those of us who were your pupils knew you as an ideal teacher, patient with all our weaknesses, and stimulating all our powers, opening to us constantly new regions of interest and setting before us the highest aims and principles of work. And since we have become able to realise better the meaning of your work, our admiration and gratitude have steadily deepened. We shall always cherish the warmest memories of our intercourse with you."

His life was not lived in vain. C. H. P. MAYO.

For 34 years (1869-1903) Levett served as chief mathematical master at King Edward's School, Birmingham. He will be remembered as one of the founders of the A.I.G.T.

He was educated at Pocklington School and St. John's College, Cambridge, taking his degree as eleventh wrangler in 1865. His life's work lay in the period when Euclid's sequence was still heavy upon schools, and in geometry his task was to do what was possible to mitigate these conditions. It is said that he wrote the scholarly *Elements of Plane Geometry*, published by the A.I.G.T. in 1884, as the work of a committee

This book is a landmark, and it may be of some interest to recall some of its features. The A.I.G.T. were not free to recommend any essential departure from Euclid's "logical sequence," for any such departure would have led to failure in university examinations. But rearrangement within the boundary of the logical sequence was permissible Euclid arranged his propositions as steps on the road to the construction of the regular polyhedra; the A.I.G.T. order aims rather at the harmonious presentation of allied groups of geometrical facts. In Euclid's scheme theorems are in a sense subordinate to problems; the object of the A.I.G.T. led naturally to a separation of problems from theorems. The whole treatment is severely logical and scholarly; for instance, there is a careful exposition of Euclid, Book V., an essential link unless a fundamentally different educational standpoint is adopted. The A.I.G.T. advocated no such fundamental change.

In the two first pages of the book there is a list of elementary constructions to be made with ruler and compass; the graduated scale is not mentioned, but the use of the protractor and scale of chords is specified in the last paragraph. I do not remember that we used ruler and compass in Levett's class room.

Perhaps the best illustration of 30 years' change of standpoint is that the first theorem in the *Elements of Plane Geometry* is "All right angles are equal to one another"; the proof occupies a page and a half.

The book was not written as a text-book, but rather as a detailed syllabus of proofs. The severity of treatment sanctioned by the A.I.G.T. in these days may suggest that geometry must have been a dull subject to learn; but it was not dull in Levett's hands. Perhaps for boys of mathematical bent the old way at its best was more effective than the new; but Levett showed us that a teacher of genius and sympathy can reconcile those historic enemies, Euclid and the average boy.

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Before the beginning of this century he had given place to younger men on the committee of the M.A., but he watched their work with sympathy.

As a teacher he appeared to be equally successful with elementary and advanced classes. He was strangely popular with boys; strangely, for he was not of the conventional type of popular schoolmaster. But boys found him kindly, humorous and interesting; and they felt immediately the distinction of his nature. As they grew up their affection and esteem for Levett deepened; at gatherings of Old Edwardians the mention of his name was invariably received with enthusiasm.

During Levett's time, and afterwards, under the reign of his successor and co-author, Dr. C. Davison, Birmingham has sent a steady stream of mathematicians to Cambridge. Levett's method with a mathematical boy should be put on record. He left him alone. He had the supreme gift, in a good teacher, of knowing when not to teach. For the most part we worked away at our books; Levett would help us when we stuck; from time to time he would take us aside into some by-path he was exploring, and give us a glimpse of high and exciting things such as non-Euclidean geometry. But systematic preparation for scholarships he eschewed and derided. We imbibed from him a contempt for every kind of cram and commercialism in learning.

His older pupils were often invited to the friendly bachelor establishment at Moseley, which he shared with the brothers Hunter and Jamson Smith.

In 1903, gravely impaired health compelled him to give up his work, and he retired with Hunter Smith to live at Colwyn Bay. He survived his friend by four years. In spite of failing health and growing disabilities he kept up his interest in mathematics to the last. C. GODFREY.

## GLEANINGS FAR AND NEAR.

**169.** For a singular instance of a young girl, "a prodigy in mathematical and musical skill," *v.* Clarendon's *Correspondence*, 1828, ii. p. 149.

**170.** Dr. Wollaston had a brain tumour which produced paralysis of one side of the head. But his brain remained clear, and the last moments of his life were engaged in writing some figures in arithmetical progression, to convince his friends that though his tongue was mute for ever his brain was clear.

**171.** Pryme asked to be placed on any Committee in which his mathematics would be of any use, so was placed on one on navigation of the Severn. It so happened that a question of pure mathematics arose. "Godson, M.P. for Kidderminster, a Wrangler of Caius, and a Scotch member, also a good mathematician were with me requested to discuss it, and the Committee agreed to abide by our decision, so impartial were they."—*Autobiog. Recollections of G. Pryme*, 1870, p. 198.

**172.** A *calculus*, or *science of calculation*, in the modern sense, is one which has organised processes by which passage is made, or may be made, mechanically, from one result to another. A *calculus* always contains something which it would be *possible* to do by machinery. . . .

Those who introduce *algebraical* symbols into elementary geometry, destroy the peculiar character of the latter to every student who has any mechanical associations connected with those symbols; that is, to every student who has previously used them in ordinary algebra. Geometrical reasons, and arithmetical process, have each its own office: to mix the two in elementary instruction, is injurious to the proper acquisition of both.—De Morgan's *Trig. and Double Alg.* 1849 (footnotes), p. 92.

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