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XXIX. *Geometry and Geometers. Collected by T. S. DAVIES, Esq., F.R.S. and F.S.A.**

No. II.

I HAVE already mentioned that there are twenty-seven letters of Dr. Simson's to John Nourse in the collection before me. There are also two from Simson's pupil, Dr. James Moor; and three notes from Dr. Robert Smith of Cambridge (the founder of the "Smith's prizes," to obtain which is now quite as high a distinction as to be senior wrangler): all of which relate to Simson. To this series the present and the next communications will be confined.

Dr. Trail, in his *Life of Simson*, p. 26, has a passage which will throw light on this correspondence. "The hesitation about making additions to the *Treatise of Apollonius* [on *Plane Loci*] probably contributed to the delay in printing the work, which was not executed till 1749. He then met with some unexpected difficulties in treating with a bookseller for the sale of the whole impression, which alone prevented the publication at that time; and except a few copies distributed amongst his friends in 1750, the book remained unpublished till after his death."

This information is founded on a letter of Dr. Simson to Earl Stanhope (at least all but the statement of the actual time of publication being after Simson's death; which is a mere inference, and an erroneous one), dated Sept. 10, 1750. Now it appears in the course of these letters that Nourse was in personal intercourse with the Earl at a period shortly afterwards, and that this intercourse did not appear to be of recent origin. Nothing is more likely than that the Earl at once brought the matter under the notice of Nourse; for the first letter of this series is dated Glasgow, Jan. 1, 1751, in answer to one referred to in it, from Nourse of the "25th Oct. last." It will be seen from the first three of these letters, that the *Loci Plani* was actually published in London almost immediately, instead of being delayed till after Simson's death, as Dr. Trail infers. A subsequent letter will also show that the work "did not sell,"—even in an age in which it has been represented that geometry was more ardently cultivated than it is in our own.

"Glasgow, 1st Jan. 1751.

"SIR,—I had the favour of Your letter of the 25th Octr. last in due time, and am much obliged to you, who are so good a Judge as several have informed me, for the kind Opinion you entertain of any of my

* Communicated by the Author.

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slender performances. I would by no means have so long delayed to write in answer to your civil letter, but that I every post expected to have heard of the receipt of Nine copies I sent more than half a year ago to Stationers' Hall, that I might inform you of the books (I mean the *Loci Plani*) being to be speedily published, but notwithstanding I have dunned the person to whose care I committed the Sending of these copies from Edinburgh, ever since he told me of their being ready to be shipt for London, I have not yet account of their being got there. I beg you will forgive my incivility in not writing sooner, and that you will be so good as to write me how to direct a letter to the keeper of Stationers' Hall whose name I know not, or, if it were not too much trouble that you would, as the speedier way, acquaint me if he has received these 9 copies, and if he has not already sent a receipt of them to be given me, that you would get one and transmit it to me, upon which I should immediately order the book to be published in the *Lon. Gazette* and some other of the publick papers.

"The price of it to the publick, bound, I am advised to make 1 l sh: the finest paper, and 9 shill: the other, which is not much coarser; and to Booksellers who take 100 or more copies 5 sh: in sheets, one third of the best and $\frac{2}{3}$ ds of the other paper. It consists of 31 sheets and $\frac{1}{2}$ sheet over in 4to, and there are about 700 copies printed by Mr. Foulis here.

"As for the Conick Sections, Mr. Alexander Kincaid Bookseller in Edinburgh bought the entire right from me more than a year ago, nay it is a year since he reprinted them at Edinburgh; but they are not yet published, and I heard last week that all the Copper plates were not cast off as yet, for what reason I know not; so it is to him you are to apply if you incline to have any of them. I have corrected a good many things and changed some Demonstrations for the better. Some few things have been added by my friend Mr. Matth. Stewart and my self, an account of which you will see at the end of the Preface. I wish you a happy new year, and am

"Sir, Your most humble

"and much obliged Servant,

"ROB: SIMSON."

"Glasgow, 21 Jan. 1751.

"SIR,—The favour of Your letter I had in due time, and return you hearty thanks for the trouble you have taken in Searching at Stationers' Hall for the 9 copies of the *Loci Plani*. Tho' a good time ago I was informed from Edinburgh that these copies had, long before that, been Sent up to London, I find now by a letter from Mr. Kincaid that they are not yet Sent, which is a neglect I cannot explain the reason of. As soon as I knew this, which was only last week, I wrote to send them hither immediately.

"I have this day directed Mr. Foulis to put up one hundred copies, $\frac{1}{3}$ d of the best and $\frac{2}{3}$ ds of the other paper, but shall wait a few days that I may get the 9 for Stationers' Hall to send along with them. Since you are so good to offer to deliver them and see them registered. There are some few Errata which I caused print after the

book came from the press, which I shall send along that they may be pasted to the leaf on which some are already printed.

"I thank you most kindly for this favour and your design of taking some more copies; You may be sure I would be glad you took the whole impression, if it consisted with your Interest.

"When you get leisure to look over the book, it will be a great favour to have your censures and remarks upon it, and the more impartial and free they are they will be so much the more acceptable to me. I am, Sir, Your most obedient humble Servant,

"ROB: SIMSON.

"be pleased to turn over.

"In your former letter you wrote that you would either remit the money or pay it by your friend Mr. Barry. I know he is a very honest good man, and my particular acquaintance, but I choose rather you would do it the former way: I shall take care to deliver him the parcell, and cause it to be delivered at the sight of one of my friends to the Carriers, in case he should be slow as you justly remark he sometimes is. Adieu."

"Glasgow, 8th March, 1751.

"SIR,—Sometime ago I informed you of the books being sent off which you wrote for, viz: 100 copies of the *Loci Plani* $\frac{1}{3}$ d of the best and $\frac{2}{3}$ ds of the other paper. Mr. Jo. Barry gave me notice 3 weeks ago that you had writ to him to pay me £25 upon your Account, and this day, which was the first time I saw him since his writing, he told me I should have it next week, which I shall reckon very Seasonable payment.

"This day I had a letter from Mr. Alex^r: Kincaid in which he writes of the 9 copies of the book being received at Stationers' Hall, but that they give no receipts. I desire you may do me the favour to enquire if they are delivered in such a manner as the book may be published, which Mr. Kincaid Sayes they are, and if it be so I desire you may cause the book to be published once or twice in the London Gazette, and as often at least in some of the most proper London Newspapers, which I leave to your choice, and Charge the Expenses to my account. I design soon to write to Mr. Foulkes, President of the Royal Societie, which I have not time to do by this post, and shall commit the Letter to your care, which you will be pleased to deliver, and Along with it a Copy of the *Loci* for their Library, and one for Mr. Foulkes himself, which in the mean time you may cause to be bound handsomely and have ready against the time you get the letter. I am, Sir,

"Your most humble and Obliged Servant,

"ROB: SIMSON.

"turn over.

"I have lately read 3 letters concerning Royal Societies &c. which I guess have been published by Mr. H—I. and dayly expect a larger book which he has put his name to, containing remarks upon the Phil. Transactions, I shall be much Obliged to you, if you be pleased to give me a Short account of the affair, and the reason of his quarrell

with the Societie. Whether has the Scribbleriad any connexion with this affair, and against whom is it intended? for I have seen only the first part of it. adieu."

These three letters fully prove the period of the publication of the *Loci Plani*; whilst the quaint stile and the indications of Simson's methodical habits, give independent interest to them. I find amongst these letters no further reference to the work in question till near the close of the correspondence, namely in a letter dated June 29, 1767, a few months before his death, and when he had nearly completed his eightieth year. He says:—

"I am sorry the *Loci plani* do not Sell, but indeed the taste for the Antient Geometry or indeed any Geometry seems to be quite worn out, and for want of acquaintance with it not a few blunders appear in the modern books; I know not if you have observed one in Kirkby's book of the doctrine of ultimators, which even a tolerable knowledge in the Algebraick doctrine of *Loci* might have prevented; in page 115 at the bottom you see there and in next page he makes the curve which he calls *Pyriformis* to be of a different kind from the *Ellipsis*, but in page 125 where he gives you the *Æquation* of it, viz: $2cv - vv^3 - v = s$ it appears to be formed by two arches of two equal and Similar Ellipses meeting one another. I could not prevail with myself to read his doctrine of *Ultimators* tho Mr. Will. Trail lent me the book to consider Something about that Doctrine; Pray let me know what you or any of your friends that deal in these things think of his performance, and if he sufficiently makes out what he designed.

"Could I think I were able, both in respect of memory and eye Sight, to print Apollonius two books de *Sectione Determinata*, which Mr. Trail who is here, and is to stay till October, has from me for some weeks past to read over and observe any errors, I would when I published them put the *Loci plani* after them; perhaps the Novelty of the first might help off the other. Mr. Trail is very urgent with me to make the wooden cuts, which I believe I shall do even tho' they should never be used by me; If I come the length of resolving to print, I shall write to you for paper.

"I wish your health and business, both which I heartily pray may encrease, could allow you to write to me oftener, it would refresh me much. Pray let me know how much I am in your debt, and let our Accounts be Settled and cleared. I believe I wrote to you formerly that, if I can do no better, I design to send you the copies of the *Loci plani* and the Latin 4^{to} Euclide of which I have a good number, for any price you think fit, or for no price at all rather than let them lie useless beside me."

The last letter of this series is dated Sept. 11, 1767 (probably his last letter to Nourse), a few months before his death. As I have intentionally left the correspondence respecting the publication of his eight books of Euclid and the data to form

a series of itself, I extract from this letter only what relates to subjects mooted in the preceding one.

“Your opinion about Kirkby’s *Ultimators* I believe is very just ; If Sir Isaac Newton had made use of the limits of ratios he had done much better than he has done by bringing in *Ultimate ratios* which I think is a very improper form, as in most cases there is no such thing as an *Ultimate ratio*.

* * * *

“I was once thinking this Summer to have written for paper to print the *Sectio Determinata*, which as you observed might have helped the sale of the *Loci plani*, but all I have gotten done is to revise the first of these books by the assistance of my good friend Mr. William Trail who is Professor of Mathematics in the new College of Aberdeen, but who has been staying here all this summer with his uncle Dr. Trail Professor of Divinity, he has copied over for me a few sheets, I believe but one or two at most, concerning the limits of ratios from which the rules for finding fluxions are geometrically deduced, and he also copied as short a paper concerning the elementary properties of Logarithms which I think have not yet been accurately treated of ; if I find myself in tolerable health next Spring, for I am afraid how I shall stand thro’ the winter, I design to annex these two small things to the *Sectio Determinata* and print them ; but if God see fit to determine otherwise by my want of health, I design to leave the care of printing them to Mr. Trail who is a worthy good young man and an Excellent Mathematician for his age ; and I design to do the same with respect to the *Porisms* if I can get them ready to be put into his hands.”

This letter is marked on the back with a memorandum in Nourse’s hand, “answered April 16, 1768 ;” and as Simson lived only till the 1st of October, it is probable that he never wrote in reply.

The complaint which Simson makes of the ancient geometry being “worn out,” was then only too true in respect to academic history : yet amongst non-academic mathematicians in this country, of whom Dr. Simson seems to have known little, nothing could be less accurate. I find that even in Cambridge, a considerable degree of patronage was afforded to Simson’s *Euclid* ; for in the letters of Dr. Robert Smith, there is notice of a remittance of 28*l.* 15*s.*, dated April 4, 1756, and another respecting 10*l.* 16*s.* on account of this work. We ought also to recollect how very extensively the geometrical writings of Thomas Simpson had been diffused ; and the periodicals devoted to mathematics (as the *Lady’s Diary*, the *Gentleman’s Diary*, the *Mathematician*, and others) will show how strongly geometry prevailed amongst non-academic men in those days, and the eminent powers of investigation possessed by those geometers. It cannot be denied, however,

that as a general rule, geometry has held a very subordinate and precarious position in our universities since the commencement of the preceding century ; whilst non-academic men, till very recent times, have manifested extraordinary skill in such researches. It is certainly a curious fact, that since our non-academic men have devoted so much more of their attention to analysis, (for I believe that Messrs. Lowry and Whitley remain the only two representatives of the old English school of geometers now left us,) the tide is setting, in one of our universities at least, in the direction of the ancient geometry.

It would appear from the last of these letters, that the editing of the posthumous works of Simson was not a work of considerable difficulty ; and indeed they are probably printed nearly in the state that they were left by their distinguished author. There is no doubt that with due attention there might have been selected from his papers things much more worthy of publication than those printed in the appendix,—the last proposition, however, excepted. This one is important in respect to a problem of great celebrity—that of the “ tactions ” of Apollonius : but on this head I must refer to a paper in the *Mathematician*, vol. iii. p. 77, where its importance is established.

There still exists (as I am informed by a friend to whom I refer in the paper just quoted) in the library of the Escorial, an Arabic translation of the *Sectio Determinata* . If it were possible for another Halley to compare that translation with the restoration of the work by Simson, it would be a subject of the greatest interest ; inasmuch as it would fully decide the degree of confidence which we should place in any “ restorations ” whatever, this being the one upon which Simson appears to have bestowed more care than upon any of his works except the *Porisms* .

I think the conclusion of Kirkby’s preface ought to disarm criticism with respect to his “ Doctrine of Ultimators.” The work itself, indeed, never appears to have attracted much attention ; and it is now altogether forgotten, except by a few collectors of mathematical curiosities. The remark of Simson, however, is correct ; for the equation which Kirkby brings out (which is unexceptionable except as to the omission of the sign \pm from the radical) is that of the ellipse. As a general rule, however, curves generated by means of ordinates to the circle assume more convenient forms of equation when polar co-ordinates are employed, though there occasionally occur exceptions to it—of which the *pyriformis* is one.

Royal Military Academy,
April 28, 1848.