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Accessibility
Edward Breath and the Typography of Syriac

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The Syriac script, arguably the most beautiful of all the Middle Eastern scripts of antiquity, has a somewhat complicated printing history. This is a consequence of the fact that Syriac writing, starting from a single early form, was subsequently cultivated and developed in two different ecclesiastical traditions. There are thus three forms of the script in all: the oldest (known as *estrangela*), the West Syrian, and the East Syrian. European printing with Syriac type (Bibles, patristic editions, lexic, grammars), from its beginning in 1539 and for the next three hundred years, was almost all done in the West Syrian character. The *estrangela* script, although not favored for texts, was also cut several times during these centuries and used in titles and headings. The East Syrian script, however, has had a printing history rather apart from the other two, and it is this which will be the particular concern of the present article.

The East Syrian script is the form of writing historically associated with the Assyrian Church of the East (less correctly known as the Nestorian church) and its Catholic counterpart the Chaldean church. Scholars in Europe were relatively unfamiliar with these churches. A Syriac grammar printed in Rome in 1596 showed an East Syrian alphabet (figure 1), but aside from this one appearance in an academic book, it was in religious publications that the script eventually came into print. Until the nineteenth century these were few, and before 1840 only three working fonts of the type had ever been produced.

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1. Some confusion can result from the various other names attached to these scripts. The West Syrian script is properly called *sermo*, but is also known as "Jacobite" or "Maronite"; the East Syrian, as "Nestorian" or "Chaldean". For these ecclesiastical names, see n. 3 below. They are best avoided in printing contexts. Some further confusion is caused when the East Syrian script is not distinguished from *estrangela*, as, e.g., in the discussion of Syriac in T. E. Reed, *History of the Old English Letter Founders*, ed. A. P. Johnson (London: Faber and Faber, 1953), 59–61.

2. It is since ca. 1830 that *estrangela* has predominated over *sermo* as the type of choice for the edition of ancient texts. For more on these two forms of Syriac type see my article "Some Syriac Types at Oxford and Cambridge." *Manuscript* 10 (1990): 181–92.


5. I exclude the East Syrian types of G. Bodoni, which were very probably never used for printing Syriac. Bodoni's inventory shows four fonts called "Caldco" of 78 characters each (H. C. Brooks, *Compendio bibliographia di Estensione Bodoniana* [Florence, 1927], 320). Two are shown in his *Ortuse dominica in CLV linguas* (Parma, 1806), X, XI, and also in H. C. Brooks, ed., *Saggio di caratteri di Giambatia Bodoni sinora non pubblicati* (Florence, 1923), 1–6. However, the text printed in these two books are in Western Aramaic (a language often called "Chaldean"). There are also quite a few misshapen letters which would have been unacceptable to readers of Syriac.
Tabulæ indicæs singulæ Chaldaearum litterarum
species, earum figuræs, potissimæ ac nomina.

| Nomen | Pictæ & Stipæs | Duplææ | Nethæsææ | Ægææ
|-------|----------------|---------|-----------|------
| 1      | A              |         |           |      
| 2      | B              |         |           |      
| 3      | C              |         |           |      
| 4      | D              |         |           |      
| 5      | E              |         |           |      
| 6      | F              |         |           |      
| 7      | G              |         |           |      
| 8      | H              |         |           |      

Figure 1. Table of Syriac alphabet,
showing the Peutæria letter in the
column “Nethæsaæ” (G. Anstis,
Cassesana Syriana, 1906). This is
the first showing of this script in print.
Houghton Library.
The first two fonts came from the Propaganda Press in Rome. In 1633 a Syriac translation of the *Doctrina Christiana* of St. Robert Bellarmine was printed in the East Syrian character. The type correctly reproduces the cursive nature of the script, including two or more different forms of some letters depending on whether they join to other letters on the right or left. The letters themselves, round and humanistic (figure 2), are elegant in their own way but lack the contrast of thick and thin pen-strokes that is distinctive in the traditional handwriting. The loose fit of the letters also made the type unsuitable for a long text, and it seems to have been set aside. When the Propaganda Press came to print a missal for the Chaldean church in 1767, it used a new type (figure 3) which owed nothing to the earlier design. At first sight this type looks crude and (unless it is the fault of consistently poor presswork) unskilfully cut, and because the letters have generally only a single form irrespective of whether they connect to other letters or not, they do not join smoothly. However, compared to the earlier type the script is squarer, darker, and closer-fitting, and approaches more nearly the traditional handwriting of a copyist of manuscripts. It also represented a considerable advance in sophistication in having the vowel points cast on to the letters. The third type was cut by the foundry of Richard Watts for an edition of the Four Gospels published by the British and Foreign Bible Society in 1829. A project of the missionary traveller Joseph Wolff, the book was intended for circulation among the Syrian Christians in Persia and Kurdistan. Thomas Pell Platt,

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7 It was used in a specimen of 1654 (Alphabetum Chaldaicum, 6 leaves; Smitskamp, *Paliologia Orientalis*, 174) and in a subsequent edition of Bellarmine's catechism in 1665. One might have expected to see it in volume 1 of J. S. Assmann's *Bibliotheca Orientalis* (Propaganda Press, 1728) dealing with the Church of the East, but it does not appear. It was still on hand, however, in 1797 to print the alphabet in the Propaganda Press specimen of that date (Alphabetum Syri-Chaldaicum, 36 pp, p. 11).
8 The missal type may be the one mentioned in David Steckland's reference to "one or two small Papal tracts, published a few years since at Constantinople, with miserable type prepared under the supervision of the Jews in that city" (Grammar of the Modern Syriac Language §44 below). 5—although I have never been able to identify these publications. Certainly the Melchiarus Press in Venice had some of the type, and it appears in their polyglot edition of Proc. S. Porus Oijienis (1625 ed. "Catalae", 142–77). At some point a smaller size was added. Both sizes may be seen in J. Gored, *Doctrina Christiana nundenta in vernacularem Chaldaecen linguam Universis proinde tradita* (Propaganda Press, 1801).
Figure 3. The Propaganda's second type (Thomas a Kempis, Interior Chimes in animo Typus, 1573. Archives—Harvard Theological Library.)
the editor of the text, also directed the preparation of the new type. It was simpler (at least for the typefounder) than the Propaganda type, being made up of unpointed letters and separate vowel points that had to be assembled by the compositor as he set the lines of text.

The fourth East Syrian type, which appeared in 1843, brings us to the Nestorian mission (as it was called) of the American Board of Commissioners for Foreign Missions and its printer, Edward Breath. Breath did not design this particular type, but in the same year he began to design and produce types for his own printing office, eventually making, before his early death, thirteen working East Syrian fonts. Aesthetically, every one of these types was at least creditable, and in sequence they show steady progress in dealing with the technical problems posed by the cursive vocalized Syriac script. A study of Breath’s work ought to be worthwhile. Harvard collections, moreover, furnish the sources for such a study. There is an almost complete inventory of Breath’s printing,12 and in the archives of the American Board there is his correspondence along with that of his colleagues.13 The two sources produce different kinds of evidence which need to be mutually controlled, but put together they form an adequate basis for an account of Breath’s typographical career.

Edward Breath was born in New York in 1808 and moved with his family to Illinois in 1819.14 There he was apprenticed to a printer, subsequently working in the office of the New York Evening Post before returning to Alton, Illinois, sometime in or before 1831. (A Presbyterian church pamphlet of that year printed in Alton bears Breath’s name.)15 The Alton Spectator began publication in 1832, and Breath seems to have been both its printer and its editor. Such a position was an indication of ability on the part of the young man, especially as he had received “only a common English education” (as he said of himself).16 Later he was printer

10 Platt, “An account of all the translations circulated by the Society” (12 manuscript vols. in the archives of the Bible Society in the Cambridge University Library), vol. 7. The manuscript of 1640 on which the edition, and perhaps the type, were based, is now Bible Society MS 447, See M. R. Pavelin and A. F. Jesson, Historical Catalogue of Manuscripts of Bible House Library (London: British and Foreign Bible Society, 1962), 214.

11 Breath’s work is, of course, mentioned in R. Anderson, History of the Missions of the American Board of Commissioners for Foreign Missions to the Oriental Churches (2 vols., Boston, 1872), 2: 116, and P. Kawerau, Amerika und die orientalischen Kirchen, Arbeiten zur Kirchengeschichte, 31 (Berlin, 1919), 358–59, 379–80. Both these books depend on notices in the ABCFM magazine Missionary Herald which do not always get the printing history right. Also regrettably, in Anderson’s list of missionaries (2: 496) Breath’s name appears as Edwin, a mistake followed by Kawerau, and by me in my earlier article (p. 2 above).

12 There are two collections at Harvard. The ABCFM Library’s own holdings came to Harvard officially in 1944. These consisted, more or less, of the 60 items listed by the Board’s librarian Mary A. Walker in Kawerau, Amerika und die orientalischen Kirchen, 613–41. As Harvard they received call numbers beginning “Mn”. Most of these books are now at Houghton, but items which were editions of any parts of the Scriptures were subsequently transferred to the library of Andover-Newton Seminary. They retain their Misc numbers there. The second collection is at the Andover-Harvard Library of the Divinity School. These items come from the library of the old Andover Seminary, which acquired them from the estate of Isaac H. Hall in 1900. This collection is slightly smaller but contains some items not found among the Misc books.

13 On the deposit of these papers at Houghton see Mary A. Walker, “The Archives of the American Board for Foreign Missions,” Harvard Library Bulletin 6 (1913): 52–58. The Board was incorporated into the United Church Board for World Ministries in 1906. I am grateful to the Rev. David Y. Hearn for permission to use and quote from the ABCFM papers in this article. References to these papers are by their Houghton call numbers, beginning “ABC”.

14 The information in this paragraph comes chiefly from the papers pertaining to Breath’s application to serve with the American Board in 1839 (see no. 16, 18 below). Some further data are provided by Justin Perkins in Breath’s obituary notice in Missionary Herald (see n. 15).


16 Breath to W. J. Armstrong (an official of the Board), 1 August 1839, in ABC 6 vol. 14, no. 105.
of the Allen O Tobey, an anti-slavery weekly whose publisher, Elijah P. Lovejoy, was killed by a mob in a notorious incident in 1847. Breath moved to Galena, Illinois, where he "became priest" (that is, he made a Christian profession) in January 1838. The local Presbyterian congregation offered to sponsor him to train for the ministry, but after consulting other friends Breath decided to offer himself instead to the American Board as a missionary printer.

Breath's application (1 August 1839) was supported by warm recommendations from his former business associates, one of whom called him "a good practical printer—as good, perhaps, as can be found West of the Alleghenies." He met the Committee of the Board sometime at the end of 1839 and was accepted. He was at first remarked for assignment to Beirut, where it was planned to print in Arabic using newly-manufactured types. Then another man came forward who knew some Arabic, and Breath was asked instead to go to the Nestorian mission, the ABCFM's work with the Church of the East in Urmiya, Persia.

The Nestorian mission had felt the want of a press since its foundation in 1833. There was no printed literature—in fact, little or no writing at all—in the local dialect of modern Syriac; and even in ancient Syriac, the language of the Bible and liturgy, the only available printed books in the East Syrian character were the Bible Society edition of the Four Gospels and one lithographed spelling book. The head of the mission, the Rev. Justin Perkins, naturally had an eye to filling the literary void, and at his instance the ABCFM had ordered a press and a font of the Bible Society/Watts type in 1836. The cargo got as far as Trebizond, but the press proved to be impossible to transport over land to Persia. The type remained in Trebizond with an agent, and the press was shipped back to Constantinople and sold. At that moment it hardly mattered, since the Board could not afford to add a printer to the mission staff in Persia. Breath, however, now had to take a new press with him, and he prudently bought one in dismantled form for assembly on arrival.

He also had to hope that the English type would be in order and serve the purpose. It so happened that while he was waiting to take ship for the east in the spring and summer of 1840, Breath was supporting himself in New York. In the same place the inventor Sidney E. Morse was just developing the new process which he called telegraphy, in which a letterpress printing surface was produced from an engraving of wax. Morse had begun to supply the ABCFM with printing plates for maps made by this process. It occurred to someone at the Board that telegraphy might be a way of printing Syriac by having a native scriber engrave the wax, so dispensing with type altogether. "Perhaps Mr. Morse will be willing to give you a few lessons," wrote Rufus Anderson the Board secretary to Breath. Although the process was then still a trade secret, Morse must have acceded to the request, and when Breath departed he took with him a stock of supplies for telegraphy.

77 According to Perkins, "he need not be Mr. Lovejoy's side"; but that may be an exaggeration of his part in the affair.
78 In the report of the subsequent trial, his name is only once and incidentally mentioned: John P. Thrall, Alias Tobey (New York, 1839, 3). However, one of Breath's correspondences (not the one quoted) came from W. S. Glasser, Lovejoy's chief supporter.
79 Horace H. Happaney to Armstrong, 2 August 1839, in ABC 6 vol. 11, no. 107. Other testimonials are in nos. 100–103 in the volume.
82 ABC 1.1 vol. 12 (1839–40), nos. 273, 275, 445, 516.
83 ABC 1.3 vol. 29 (1841–42), nos. 38, 96. Morse's earliest maps for the ABCFM are those published in J. Tracy's History of American Missions to the Indians (Worcester, Mass., 1841).
84 ABC 1.3 vol. 13, no. 44 (2 March 1840).
Breath arrived in Persia, via Smyrna and Trebizond, in November 1840. The press, he reported, had been "a source of wonderment on the road, some pronouncing it as a steam engine, and others a machine for making cannon." It was at once set up in Perkins's cellar. The type, which had been found intact in Trebizond, likewise arrived safely with Breath. The first pull from it was taken on 21 November, the Lord's Prayer in ancient Syriac. Perkins wrote in his journal, "The 'Press' is now the Lion here. Numbers call daily to visit it. The Nestorians are greatly delighted with it, alike as a curiosity, and as holding out a pledge of important aid and benefit to their people." To Anderson he wrote on 28 December that Breath "appears to be a very intelligent man—and admirably fitted for his department." The first book to be undertaken by the press was the East Syrian liturgical Psalter, an ambitious work printed in red and black. Along with this text in ancient Syriac, one was produced in the modern language, consisting of extracts from the Bible, the Lord's Prayer with short commentary, and Ten Commandments. This smaller book was finished first, on 13 March 1841, to the "mute astonishment and rapture" of the two local priests who were Perkins's assistants, at seeing their spoken language in print (figure 4). The Psalter was issued later in the year.

In both these books the type from England was used satisfactorily. Only minor adaptations had been necessary. Most noticeably, a tilde was improvised to go under the letters gamal and kap when needed in the modern language; and whereas in the Four Gospels there had been only one e vowel, Ε, now the long a vowel was used upside-down below the line to distinguish long e, Α. The type was "suited to the tastes of the Nestorians," Breath wrote to Anderson on 26 December, and (at least while cerography remained promising) there was no need to think of commissioning a new font. All the same, the type gave Breath some anxiety about its future use. It was not simply that it was unpointed. The extra labor of setting points separately was not a prohibitive cost in the mission field as it might have been at home. (Breath had at that time a workforce of six local men, paid $5 per month each.) There were other technical reasons too for preferring an unpointed type, as we shall see, although Breath probably did not yet appreciate these at the beginning of his career. However, the Watts typeface had a particular disadvantage. In order to allow the points to fit closely, the type was cast on only a pica or small-pica body, just covering the x-height, the ascenders and descenders being then on rather long kerns. Not surprisingly, these were liable to break, and it was uncomfortable to be dependent on resupply from London. (Even without the problem of the kerns, such resupply would have to happen every three or four years, Breath reckoned, as the type wore out.) Not only so, but at the same time that the type was small in its body, it appeared large and loose-fitting on the page. The boldness was not unattractive, but the Psalter

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24 ABC 16.8.7 vol. 2, no. 74.
25 Perkins, Residence, p. 74.
26 So it is shown in the Watts specimen of 1835 and 1856 resp. In the ca. 1932 specimen of William Clowes it is shown as 11-point. (These specimens are in the St. Bride Printing Library, London.)
alone required 196 quarto pages; and if more extensive parts of the Bible were to be undertaken some smaller type would certainly have to be used.

Circumstances, in the mean time, conspired against the intended experiments with cerography. On his outward journey Breth had suffered the loss of one pack animal, and it was carrying some of the requisite supplies. What he could not replace in Persia was brought, and so a wait ensued while Breth requested

"Breadth entered largely into the composition from which this plan are cut." (Breath to Anderson, 18 December. ARC 16:8:3 vol. 5, p. 150)—a fact conjectured by Woodward (16 American Map, 21) but not otherwise ascertained.
50 lbs. of the metal to be sent. It was uncertain that the process would after all work when the supplies came, and so when the opportunity to get a new fount of Syriac did present itself, Breath took it. At the end of 1841, the ABCFM's printer and typefounder in Smyrna, Homan Hallock, returned to the United States and was attempting with some help from the Board to set up as a punch-cutter on his own. Breath thought it might cost no more to commission Hallock to cut a set of punches, even for a pointed type, than to buy new unpointed type from London. To be sure, on his own Hallock could not be expected to make the punches and matrices: the scheme of letters plus points was too complicated, and without manuscripts he would not have a sufficiently good feel for the appearance of the script. Perkins, however, was just then on furlough and offered to supervise his work (with help from the bishop Mar Yohannan who was accompanying him), and so the new type was put in hand.

The project began promisingly. Perkins boarded with Hallock's family for several weeks in mid-1842 while they worked together on the type. Breath sent some specimens of Syriac writing to help them. Still, the matrices were not finished when Mr. and Mrs. Perkins reembarked for Persia in April 1843, and when in September the Urmia missionaries did receive a sample of printing from the new type, it looked to them problematic. Perhaps this sample was the same setting of the Lord's Prayer that appeared in an article on “Oriental Types” in a later issue of the ABCFM magazine Missionary Herald. In this specimen a number of vowel points are missing, a fact suggesting that the matrices did not include all the necessary combinations of letter plus point. Hallock supposed that this defect could be made up by casting new types from the existing matrices and filing off unwanted points. With the type, punches and matrices, when they arrived at the end of 1843, were a type mold and some files.

The tools did not, however, suffice to repair the defects. In a trial, the first form of a duodecimo book in modern Syriac turned up eighty-three deficiencies in the type, of which only twenty could be supplied by casting from the matrices. To salvage something from this disaster, the letters were then cast unpointed in a mold of small-pica size (or thereabouts; it was probably homemade), so that the old Watts points could be used with them. With the type thus fitted up, Breath and his workmen produced a pocket edition of the Gospel of Matthew in modern Syriac. This book looks well enough (figure 5), and the type certainly does not disgrace its designer, but the missionaries pronounced it a failure. Considered purely as a script, Hallock's type is leaner and less formal than the Watts type, and evidently neither Breath nor the local adherents of the mission thought these qualities made for any improvement. Nor was the type more economical: as adapted without points it saved little or no space over the Watts type, and it was just as laborious to compose. In its original form the type with points was smaller, great primer in size, but it seems no one thought this advantage was worth the trouble of sending the punches back to Hallock for him to strike the necessary extra matrices. Nothing more was seen of Hallock's Syriac, and when three years later the punches and matrices were stolen from Breath's room, he reported the matter without much regret.

59 There were at this date perhaps no Syriac manuscripts in the United States at all. Harvard's first acquisition (Houghton Library MS Syriac 1, a West Syrian manuscript) came in 1863.

60 (May 1844), 179-72, showing three of Hallock's types. The author of the accompanying notice, Edward Robinson, did not mention the chief new feature of Hallock's Syriac, that it had the points cast on.
It was, however, just the rejection of this type, with the presence to hand of the punchcutter's files sent by Hallock, that set the stage for Breath's own debut as a designer and founder of type. It is unfortunate that we have no account by Breath of how he began. The actual casing of types from a hand-mould is relatively simple, but the cutting of punches and the striking and justification of matrices are skilled and precise operations. Breath gave nothing away when he later wrote that "I never saw punches made, or the tools for making them until I was compelled to make them and use them myself."[10] A. H. Wright, Breath's colleague who also had some responsibility at the press, mentions in a letter that Breath had one assistant. This must have been Iseal, who, according to a biographical sketch published later, was a type-founder, and cut most of the type used during his life. He could also cut punches very well, and he made a type-mould that answered a very good purpose, compelled by the necessities of the case. He also "fitted" matrices, that is, filled, straightened, and thus adjusted, to the type-mould, the pieces of copper into which the steel-lettered punch was driven. He was never at a loss, and in any country would have passed for a man of rare ingenuity.[11]

Still, we should like to know much more: who made the drawings, how they obtained materials, and how they attained the necessary accuracy, for example in the depth of the strikes, with their basic and improvised tools. How ever they did it, the first two founts took them only three or four months, and by the beginning of 1466 two more founts had been added to their production.[12]

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[12] All the external information about Breath's first three types depend on two letters Wright to Anderson, 14 April 1897, and Perkins to Anderson, 15 November 1897 (ARC 84.1, vol. 1, nos. 177, 177 resp.).
The first two types, according to Wright, “resemble each other, the difference being that in one the stroke is larger and the letter more open.” Both founts were praised in a general way by Wright and Perkins, but the smaller one is not said to have been used for any book, and, as far as I can discover, no piece of printing survives to show what it looked like. (We thus have no illustration of type 1.) Type 2—“a still better success,” as Perkins put it—is the one that appears by itself in three books of 1844–45. These were the pious story of The Dairyman’s
Daughter, translated into modern Syriac by Perkins (and printed at the expense of the American Tract Society) (figure 6), an edition of the Four Gospels (printed at the expense of the American Bible Society), and a combined catechism and hymnbook.²

Type 3 was finished in the spring or summer of 1843, in time to be put into service for the press's most ambitious work so far: the New Testament in parallel columns of ancient and modern Syriac. Printing began with type 2 for the ancient text, and type 3 for the modern. Type 3, just slightly lighter and narrower in set than type 2, was suited to print the modern Syriac columns of the New Testament, since the translation took more words than the original and required a smaller type to keep it in step. The shapes of the letters show a few slight refinements, e.g. sharper serifs on lamad and gamal, and a new which is more nearly circular.

Type 4 appears not long into the New Testament (in signature 14 out of 105) as a replacement for type 2. Although the changeover is hardly perceptible to the ordinary reader, there are again small refinements to be seen in most of the letters. These chiefly carry over and sharpen up further the changes already seen in type 3. The letter lamad makes a more acute angle than in either of the previous types (figure 7).

Perkins, who was as much amazed as anyone about the local production of types, wrote to Anderson (14 November 1843):

Little [said Mr. Bread, or the rest of our mission, imagine [that] some of type would ever be made to spring up [from the] Flora of Ceylonah, almost with the regularity [of] mosses under his then entirely unmannured hand, when he so strongly urged the importance of Mr. Fillick's engaging in the work for us, under the unavoidable disconcerts of distance from the people who use the language, and in the absence of some of the best models, while I was in America.]

It was certainly marvellous that the types should spring up so quickly—and this was written probably even before type 4 appeared—but even more extraordinary is the quality of their design. The contrast of thick and thin strokes is consistent, and the letters fit closely and agreeably. By comparison with the Watt type every letter comes closer to manuscript writing. Indeed, even by comparison with Bread's subsequent work, which was almost all done under the necessity of making the type smaller, these first types are striking. They appear rather like private-press types next to the more industrial ones to come.

Bread's first types followed for the most part the scheme of the Watts type. The letters were, of course, unpointed and required separate vowel points. Bread also made most of the same economies as that type in dealing with the cursive Syriac letters. In the Watts type there were no separate final forms for most of the letters (excluding kapi, mem and nun, which have special and unavoidable forms). Only yod and lamad had one extra final form each; otherwise, there was a separate final/throat-stroke character which could be added on the left of the other letters when they were in final position in a word. Bread followed the same expedient, only deleting the extra yod and lamad. Less agreeably, the initial forms

² Each year the press aimed to do some printing at the expense of these two societies, both of whom gave annual grants for the purpose, besides what had to be charged to the Board.

³ ABC 6.8.1 vol. 1, no. 372. The bracketed words and space represent text lost from a corner of the page which has been torn away.
of some letters had also been eliminated in the Watts type. There were the correct two forms of some letters (het, dale, gamal, he, azep, tet, mem, nun, semkat, gap, reh, saw), one with a stroke protruding on the right for connection to a preceding letter; but others (het, yad, kap, lamad, ayin, pe, sad, shin) had only one form, squared off on the right, for use with or without a connecting letter. Breath must have recognized that this was over-economicizing, and he made separate initial forms of the letters kap, lamad, ayin, and pe (although still not het, yad, sad, or shin). In the Watts font the letter iaua had all four possible forms, following a mistaken belief that it was correct for Babylonian and certain following letters. Breath retained, and used, all these forms. He likewise retained the three forms of alap, one for use only after lamad. The Watts type included an alternative form of iaua (even though Platt had practically discontinued using it part-way through the Gospel), and two different forms of too-alap ligature. These too Breath kept in his fonts. Types 3, 4, and 7 were now on a long primer body (approximately), slightly smaller than the Watts type. The points began by being cast on a mixed (again, approximately) body, but they added so much to the depth of each line that they must have been re-cast on smaller bodies (about nonpareil) for the New Testament, so making space for two more lines on each quarto page.

Type 3 was used in its own with the smaller points to print another short text, a catechism, in 1846 but it was still too large for a text of any length. As the New Testament was in the press at the end of 1845, Breath began work on a smaller type that would meet the requirement for economy of space. He wrote to Anderson on 20 January 1846 to ask for a diamond-size mold, that is, even smaller than nonpareil, presumably to case points for this type. The type itself (type 2) was soon ready, well before the New Testament was finished (the printing was suspended for a time for want of ink, which had to be imported). The edition had not so far included the traditional subscriptions to the individual books, but the new small type was finished in time for these to be printed for the Pauline epistles. Since these subscriptions (e.g., “Here ends the letter to the Romans, which was written from Corinth”) were not part of the inspired text, it is surprising to see them in the edition at all, and it must be that Breath wanted a chance to display the type.

Even so, he cannot have been satisfied with it, and nothing else appeared in this type. In February 1847 Breath was reported still at work on a small type for printing the Old Testament. It was this project, the completion of the Scriptures in modern Syrian, which excited the missionaries. It had run into difficulties, however, with the committees in America, both of the ABCFM and of the American Bible Society. The missionaries insisted that in order for a translation from the Hebrew text to be acceptable among the local Christians it would have to be accompanied by the old Syriac version (the so-called Peshitta) in a parallel column. The committee members, however, disparaged the ancient version, and permission for the two-column arrangement was refused. So the matter stood when Breath’s type (type 6) was finished. A proof was set up from Genesis 4 in modern Syriac (figure 8), but it was not clear on what conditions the printing could go ahead.

From Breath's two small types of 1846-47 it is clear that, technically, punches and matrices at this size were difficult for him. Type 5 includes a few badly shaped letters, particularly some forms of mem and aleph. Senkat, with its two counters, is too large. In type 6, however, proportions are good. As may be seen from the illustration (the only surviving scrap of setting from this type) the letters have an even and comfortable appearance, although the serifs on some letters have become larger and spikier in proportion to the letters themselves in consequence of the smaller size. (The resulting horned shape of qoph is particularly clear.) The lines of text are 6.2 mm apart, only just more than great primer set solid. This was Breath's finest technical achievement so far.

Breath was a single man. When Perkins was in America in 1841 Breath had written to thank him for his "willingness to serve me in that particular, and hope you may be successful." That particular we may take to mean the finding of a wife; but whatever Perkins may have done for his colleague, it did not bring the desired result, and now five years later Breath wished to look for himself. In requesting leave to return home he was too embarrassed to state that this was his aim, but Anderson thought he rightly understood it. After a delicate exchange of letters, the leave was granted, and Breath departed in March 1847. He brought with him to the United States copies of the New Testament just issued, and he explained to Anderson his plan for the next refinement in Syriac typography. To produce a type any smaller than type 6 would require the points to be cast on the letters. Matrices for such a type necessitated step punches that could accommodate the points and produce a pointed matrix in one strike. These punches would also have to be closer work than Breath had yet succeeded in doing.
Therefore, while in the United States he would find a craftsman to produce the punches, and then he would make the matrices and type himself in Persia.

Within a few months Breath found a punchcutter who had lost his position when his employer's typefoundry burned down and was therefore available to do the Syriac punches. Breath told Anderson (1 September 1848) that they would cost about $1 per piece, or less than $100 for an entire set. They were evidently ready by the middle of 1848. Breath's other errand took longer, but he was married to Miss Sarah Ann Young on 13 June 1849. The punches, and probably also the matrices (if he had occupied some of his time before the wedding by striking the Syriac matrices as he planned), were with Mr. and Mrs. Breath when they arrived in Urmia in mid-October.

In June 1848 the American Bible Society had released and given permission for the edition of the Old Testament in parallel columns. Perkins, eager to begin the printing, had to wait patiently first for Breath to return and then for him to cast the type. (In Breath's absence the press had operated at a reduced level, and it had also suffered by the sudden death of the best printer, Isaeli.) The most significant production of these months was a bulky edition of Pilgrim's Progress in modern Syriac, using type 3.) Printing of the Old Testament began at last in the summer of 1850, and it occupied more than two years. Perkins wrote on 18 March 1851:

The aching head and smarting eyes of him who has so indefatigably toiled over the type, as also of those who are still toiling over the revision of the copy and the correction of the proofs, by day and by night, are cheered by the prospect, now not distant, when the Nestorians shall have the matchless boon of the Bible, in so attractive a garb, in both their classical and vernacular tongues. The pages that issued from the press were dense and black (or anyhow gray), the press being evidently not powerful enough for a good impression on such a large printing surface; the new type (type 7), only English in size including the points, wasted no space when set solid (figure 9). It needed to be so, since even with this crowded layout the Old Testament in ancient and modern Syriac made a heavy large quarto volume of 1051 pages.

While the Old Testament was in the press, Breath received a request from the American Oriental Society for some of his Syriac type. David T. Stoddard, one of Breath's colleagues, had been elected to the Society in 1848 and he had promised to prepare a grammar of modern Syriac. For this book and for future use he suggested to the Corresponding Secretary, Professor Edward E. Salisbury of Yale, that the Mission might supply them with some type. Salisbury asked for a hundred pounds of type with points cast on. In answer (27 February 1851) Breath first declared the insuperability of supplying type at all, owing to the shortage of type metal and the difficulty of transporting such a heavy cargo. A set of matrices would do as well as type, and this he offered. The matrices would, however, be unpointed. As Breath explained:

We could not send you a set of matrices with the points attached to the letters short of some months labor, and then there would be many difficulties unless we had before the work you are about to print, and you would find your set again defi-
cient should you attempt to print anything else. The ancient language calls for forms that are not at all required in the modern, and the modern some that are not used in the ancient. There are forms used only in single words. For example, you would have no occasion for א except in a "snake story"... I have still to make an occasional matrix for the Old Testament, although it is about one fourth completed; the form newly made not having been called for in the previous part of the book.

The matrices he was sending would be free of charge, he said: they were, like all his work, "awkward", and "I confess I am ashamed of them."43

What Breath sent to Salisbury was, it appears, a set of matrices at least partly struck from the punches (without points) of type 7. (We number it here as 7a.) Type was cast by the Rogers foundry of Boston, and Stoddard's grammar printed in New Haven both separately and as part of the Journal of the American Oriental Society44 (figure 10). According to a note at the end, a certain S. S. Kilburn at the foundry recut "several letters and points" and made "some important additions to the font." The additions can be fairly easily identified: there are separate initial forms for נ, ד, י, ג, which is certainly not Breath's work. (A very ungainly medial י also appears in the table on p. 9 but fortunately not again.) The alternative תו (b) reappears, after having been eliminated by Breath in type 7.45 Certain other letters (ת, פ, ג, ל, מ at least) that are slightly different from type 7 are probably the ones recut by Kilburn, although they might in principle be Breath's alterations. Regrettably, after all the labor which went into the preparation of this quite satisfactory type, it was hardly ever used again by the American Oriental Society, and no other academic printing in the East Syrian character was ever done in the United States.46

43 The next phrase seems to read "... or א unless you were treating of nice", but I regret I cannot make sense of this.
44 The word for "snake" here must be modern Syrian ש, (so spelled in Numbers 21:6, though later in the Old Testament it is ש). This note letter from Breath, and others from Stoddard, to Edward Salisbury are preserved in the archives of the American Oriental Society in Sterling Memorial Library, Yale University.
45 This letter appears in the table on p. 9 but fortunately not again.
46 The type also appears in the New York-printed edition of Scripture of 1864, 1874, and 1895 (see n. 36 below) in titles and headings.
To return to Breath's own printing office: the Old-Testament type (type 7) was for a time in daily use. A periodical just begun by the missionaries entitled *Rays of Light* (incidentally, the first regular periodical publication in Persia in any language)\(^*\) used it from its second issue. So did the next sizable book to come from the press, another Protestant classic, Richard Baxter's *The Saints' Everlasting Rest*, translated by Perkins and issued in 1854. For this job the type was agreeably headed; but already by March 1853 Breath was reported to have produced a new font of type, and the Old-Testament type passed into disuse. Part of the reason was the scarcity of type metal. It was usual to make one type when a new one came into use, and the larger size of a pointed font made it even more necessary to use old metal. However, Breath was probably also dissatisfied with the cutting of the letters by his hired craftsmen. Certain characters in type 7, notably alap and ram, have a thinner stroke than the rest, and others like lamad and mem are muddy. These deficiencies were submerged in the technical achievement of producing a pointed type, but they will certainly have become obtrusive in time. In any case, the new type 8 displaces it in publications from 1854 on.

This font demonstrates what Breath's letter to Salisbury had earlier implied, that he had now attained the skill to produce pointed matrices himself. It is also a sign of technical command that Breath allowed this font (and all his subsequent ones) the luxury of separate final forms for the letters *be*, *he*, *lam*, *qayem*, *yin*, *pe*, *qaf*, *shin*. (One might wish that he had supplied some more initial forms too, especially *yad* and *bher*, which are not correct with initial upstrokes.) On the whole type 8, although very bold (the ratio of base-line width to x-height is .35), is pleasing (figure 11). The letters are well shaped, except for *je* (which is disproportionately wide), initial lamad (still muddy) and *mem* (where the counter is not in the middle). With type 8 we also see the full maturity of the mission's typographical conventions. Most noticeably, the old practice of joining *waw* on the left to certain other letters is now abandoned. The alternative *taw* appears only very rarely and its corresponding *taw-ba* ligature seemingly not at all. The other *taw-ba* ligature is also

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*\(^*\) See G. Yonas, *Journallus bei den Armen* (Augsburg: Zentralstelle der Armenschen Vereinigungen in Deutschland und Mittelmeere, 1905, 23–24).*
used less frequently than in the early books of the press. Unlike all the previous types, this one remained in use by the press well after Breath's death, although most often in headings and for emphasis, rather than for continuous text.\(^4\)

We must imagine that it was for this purpose, the easy reading of continuous text, that Breath was still in search of the perfect typeface. His next essay, a lightface character (type 9), was suggested no doubt by the fact that in English lightface types are easier to read than bold ones. This type appeared first in 1855 in an arithmetic textbook, where it was particularly well suited not to overpower the lightface (Western) figures. The fourth had again the alternative type and in this book the compositor used it freely, although in subsequent books it is rare. Recalling that Hallack's type was also a light-face and of approximately the same body-size, it is instructive to see how much improvement had come from Breath's eleven years' education in Syriac punchcutting. The leniency of the type was, however, exaggerated by its too wide set, and some other letters, especially the over-wide final mem and several other letters like te, which seem slightly too large, are obtrusive. The effect was evidently not to everyone's taste. Perkins commented (27 November 1855):

A new and valuable font of type, of quite a small size, prepared by Mr. Breath, was used in printing the Arithmetic; which of course contributes to the economy of this department, though not on the whole more acceptable to the native eye, naturally partial to the larger type, which corresponds more nearly to the bold stroke of the Newtonian Pen.\(^6\)

The type continued in use for about a year, always alongside type 8.

After 1855, four more Syriac types were encountered in the Mission publications. All of them must be the work of Edward Breath, although we have no information about them beyond what is provided by the books in which they appear. Breath did not usually mention the typefounding side of his activity (as opposed to the printing of books) in his correspondence anyway, and to Perkins the appearance of new types must have become such an everyday occurrence that he did not think to record it either.

In 1858 the Mission published a Syriac translation of C. G. Barth's *History of the Church of Christ* (a work 'well adapted to check the progress of Popery').\(^5\) The text of this book was set in yet another new type (10), Breath's last and most successful attempt at a type for continuous reading. The success of the type lies not so much in any innovations in the design of the letters but in the even ensemble of the whole font and the absence of any obtrusive individual sorts. The degree of boldness also seems to have been aimed at moderation, the ratio of base-line width to x-height being .30, which was more than in type 9 but less than in type 8.

In the same book, Barth's *Church History*, there was another new type, a large unpointed display type on the title page (type 11, figure 12). Breath's earliest books, after the fashion of Syriaca manuscripts generally, had had no title pages, but they were soon introduced. Several of the more pretentious books had

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\(^6\) Report of the American Board of Commissioners for Foreign Missions... 1857. (Boston: 1857), 80. The Syriac version was made from the English translation of 1851.\(^7\) German original 1855.
freehand-written titles—in a curly script evidently intended to imitate Western ornamental typography—reproduced from wood engraving or perhaps by cerography. The new display fount, decidedly plain, fixed a different style and gave subsequent mission-press title pages a characteristic and rather more earnest look.

(One might have wished for the titles at least to be printed in red, but the press had never printed in two colors since the Psalter of 1841. It is almost as if they identified rubrication with the idea of a fixed liturgy—always a bugbear of Evangelical missionaries.)

In 1858 the Mission published an edition of the Old Testament in modern Syriac with cross-references in the margins. The text is in type 10, with the references (bare biblical chapter and verse numbers) in an unpointed type smaller than anything hitherto seen (figure 13). This type (12) must have been a special production by Breath for this volume. The limited evidence indicates that it is a straightforward reduction of type 10. The New Testament followed in the same format in 1860.

Breath told Perkins in the summer of 1859 that he was ready to return to the United States with his family. He considered that with sufficient printed copies of the Bible to last for years to come—and, though he did not say it, with a good stock of Syriac types—the press would have only the routine printing of school books and the like to do, which the local printers could manage without him. Anderson, however, pressed him to stay,31 and he complied—though it was not to be for long.

The small type 13, Breath's last design, must have been made at about this time. It looks like a further reduction of type 12, with the addition of points and including all the extra final and initial forms of types 8–10. To make a fount of such sophistication on a type body of only long-primer size including points, must count as a tour de force of punchcutting. The type came into use only after Breath's death,32 first in 1862 or 3 in *Rays of Light*, then in biblical commentaries where it was found useful to separate the commentary in small type from the biblical text, then in all kinds of subsequent publications. Just a few letters are odd: 'ayin is curiously narrow and upright, and *semkat* is still too large. However,

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31 Anderson to Breath, *ABC* 2.1.1 vol. 25, pp. 400–1 (22 August 1859); Breath to Anderson, *ABC* 16.6.7 vol. 5, no. 121 (7 December 1859).
the script is remarkably clear and readable. It is a worthy type to stand as Breath's last production (figure 1).

Edward Breath died suddenly of cholera on 18 November 1855. His wife returned with their three surviving children (three others having earlier died) to the United States. Breath was an eirencical and respected member of the mission staff, and his death was mourned by his colleagues most sincerely. Tributes (which were not limited to Breath's accomplishments in printing) were published in the Missionary Herald. Here may be quoted just the part of Perkins's which touches on the subject of this article.

With wonderful tact and talent he has cut and constructed our beautiful fonts of Syriac type; on the spot, from real to real, with a hand before unpractised in that art, but which has succeeded so by his rare and complete success. He has thus saved thousands of dollars to the American Board. Through his press he has issued for the Nestorians more than 80,000 volumes, including several editions of the Scriptures in Modern Syriac, thus giving to that hungering people a precious Christian literature of about 16,000,000 pages, in a language never before printed. 5

5 A single, all too confirmative reference to this type is found in a letter of one of the missionaries, Samuel Bliss, in Anderson (18 April 1855): “I send you a few specimens lines of the small type we are now using in printing some on the Gospel of Mathew. We have not used this type, which was cut under Mr. Breath's death, by him, our ingenious type-maker, for one book, only occasionally printing a volume or two in the monthly paper.” This might suggest some uncertainty in identifying the type as Breath's. Yet Bliss does not say that he has "cut" the type, only that he "cut it. Moreover, for it to have been made in the space of a year by a local "type-maker" who cannot have had long experience and whose name is otherwise only mentioned in any correspondence or printed report, would be unbelievable. In spite of the silence of the sources during Breath's lifetime, I think that at least the punch, if not all the matrices, must be his work.
The printing-press continued its work until 1870 under the ABCFM and for upwards of forty more years under the Presbyterian Board of Foreign Missions, but with Breath's passing its days of typographical innovation were over.

By way of a short postscript, we may trace the migration of Breath's type-designs to the printing industry of the West, which took place along two paths. First, type 13 came to the United States for the printing of the Syriac Bible by the American Bible Society. The project began in 1862 in response to a request from

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54 For the transfer of the Mission to the Presbyterian Board see my *Church of the East*, 72. There is as yet no history of the Mission, still less of the press, in the years after 1870.
the Mission, just after Breath’s death, for the ABS to print a pocket edition of the
New Testament in modern Syriac. A. H. Wright, one of the Mission staff, was
in the United States at the time and read the proofs. The book was published in
1864. It seems most likely that matrices and type were made in New York from
the punches of type 13 sent from Paris. This edition was often reprinted, and
ditions of the classical Syriac New Testament (1874), and eventually the whole
Bible in modern Syriac (1893), were published, all in New York, in the same
type. In 1898 the Oxford University Press ordered a font from the Farmer
foundry, who had presumably cast the type in 1862, and used it for A. J.
Maclean’s Dictionary of Vernacular Syriac in 1901.

The second path followed by Breath’s type designs to the West leads via
Leipzig and the firm of W. Drugulin. In 1885 the Vincentian scholar Paul Bedjan
(1858–1920) began a publishing career that would eventually place to his credit
thirty-six volumes of Syriac texts in the East Syrian character, all printed by
Drugulin. Drugulin’s specimen of 1879 shows no East Syrian types, so it might
be that the ones used in Bedjan’s books were laid in especially at his order. The
two types used for running text are obviously Breath’s types 10 and 13, or rather,
careful copies of them. In these copies the size of Breath’s type was retained
exactly, and there are otherwise only minute variations from his design, for
example in the larger size, the slight modulation of the bowed top of he and the
spike at the upper right corner of he, and in the smaller size, the widening of eyn.
Drugulin later recut the final a as in a bolder round shape, presumably to
strengthen it against breaking but that is the only letter which is not almost
exactly as Breath drew it. Drugulin also supplied these two fonts to other
printers, among them the Cambridge University Press, which acquired the larger
size in 1897.

A look at Syriac type design in this century would go beyond this article, but
such a look would show that Breath’s influence has been strong even where his
types have not been copied exactly. In recent years literature and journalism in
modern Eastern Syriac (or Assyrian, as it is now usually called) have proliferated,
especially with the advent of desktop typesetting, and Breath’s work is now seen
by more readers than ever. It is right that its history should be a matter of record.

91 This is my hypothesis based, again, on inspection of the
press rather than on archival information which, from
both the ABCPM and the ABS sides, is curiously
wanting.
92 See one or Dillow and Moxie, Historical Catalogue, 2,
127, 131.
94 See J. F. Nestle, “Paul Bedjan, le lauréat pressman,”
(a) 183.
95 Bedjan came from a Christian village in Petra and will
have seen Breath’s books from his youth. He explained
later that his publications were aimed at breaking the
persecution monopoly in religious books in modern
Syriac. See J. Legren, “Paul Bedjan, ein christlicher
282. In his narrative, all Bedjan says about Drugulin is
that “die Pressen hat das beste chaldäischen Types.”
Vost (see the previous note) is no more informative.
96 The fonts are shown as “Tetra” and “Circus” in size in
the 1932 specimen of the pressman Hugo Drugulin (in
the St. Bride Printing Library).
97 Some Syriac Types.” 116. A look at some books
printed by the Dominican Press in Mosul shows what
seems to be Drugulin’s version of Breath’s small type.
If this prove was also among Drugulin’s credentials, it
would make the journey of Breath’s design a round trip
back to the Middle East.