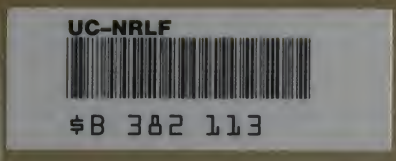

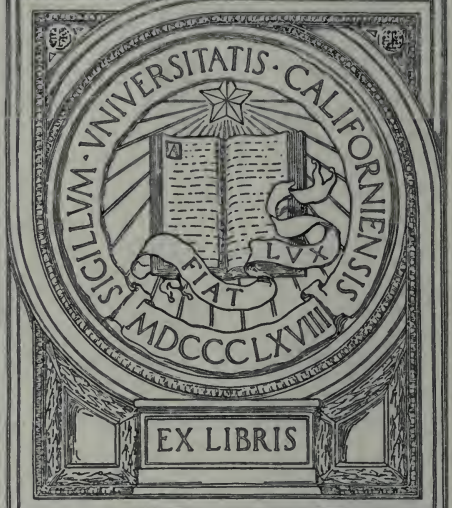

PRINTING FOR THE BLIND.

REPORT

OF A COMMITTEE OF THE

American Social Science Association,

AT THE GENERAL SESSION

IN DETROIT, MICHIGAN,

MAY, 1875.

BOSTON:
ALFRED MUDGE & SON, PRINTERS, 34 SCHOOL STREET.
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Dear Sir, — I send you the following copy of the Report of a Committee of the American Social Science Association, which was read at the four days' meeting recently held in Detroit, Michigan, which will soon be published with the full proceedings of that Convention.

It will be seen that they strongly recommend organizing an Association, to produce, at one central place, all the maps, charts, globes, printing of all books, all school apparatus, writing-boards of different kinds, slates of different patterns, and every kind of apparatus invented for the blind.

On the last leaf of the cover I have added a statement of the object and present organization of the American Social Science Association, as some may not be aware of the broad ground of usefulness it is occupying and the great social benefits it is accomplishing.

S. P. Ruggles.

Boston, June, 1875.

REPORT.

Mr. Sanborn read the following Report, prepared by President Charles W. Eliot, of Harvard University, on behalf of a committee consisting of himself, Henry Villard, and George T. Angell, on the subject of

"PRINTING FOR THE BLIND."

The undersigned were appointed a committee to examine the educational apparatus for the use of the blind which has been invented within the past few years by Mr. S. P. Ruggles, of Boston, and to consider the proposition which he made to the superintendents of Blind Asylums in 1871. They have attended to this duty, and have the honor to present the following Report: —

With the best appliances now in use, the blind, unless very exceptionally intelligent, read, write, and cipher through the sense of touch, slowly and laboriously. All knowledge which is obtained through reading and writing they therefore acquire painfully; they study Geography, Algebra, and Geometry under heavy disadvantages, and composition, even in their native language, is for them very difficult, because of the time and labor required for the mechanical operation of writing in such a fashion that they can themselves read by the touch what they have written. Moreover, the tools with which the blind now read and write and study Geography and Arithmetic are costly, so that even the best-equipped asylums are but scantily provided with the most indispensable tools.

To improve these appliances materially, and to make them cheap, would therefore be an immense service to the blind; and it is just this service which Mr. Ruggles wishes to render them. It will be most convenient to consider his various inventions under the several heads of Reading, Writing, Arithmetic, and Geography.

1. *Reading.* The blind read by touching with their fingers raised letters. Neglecting unessential variations there are two

kinds of letters in this country: first, letters which closely resemble in shape the letters used in print for people who see; and secondly, letters which are made up of points without connecting lines. The first kind was introduced, and has been widely disseminated, by the Perkins Institution, at South Boston, Massachusetts; the best examples of the second are the Braille letters for writing. and the letters introduced by the New York Institution for the Blind for both printing and writing. The Boston letter has the advantage of being easily read by those who see, and it has been used in a large number of books; but there is no question that the point letters are much easier to read by touch, and that a considerably larger proportion of blind people can learn to read them with facility than can learn to read the Boston letter. It may be doubted whether the point alphabets already in use are the best possible, but it cannot be doubted that they are superior to the Boston letters. In reading the Boston letters the blind feel only the corners and extremities of the letters, not their whole outlines. Sharply raised, isolated points are much easier to feel with distinctness than the ends and angles of lines. One objection which has been urged against the Braille and New York characters is that they cannot be easily read by the eye, so that teachers who can see are put to some inconvenience by using with their blind pupils books printed in these characters. The objection is not a forcible one; but Mr. Ruggles has found a way to meet it by making a point alphabet which is superimposed upon a lower embossed Roman letter, each character presents prominent points for the touch, and lower but perfectly distinct lines for the sight.

The number of books printed for the blind is relatively very small, on account of the costliness of printing in embossed characters. Stereotyping is the only available method of preserving for future use the pages once composed; and the ordinary mode of stereotyping locks up so much metal that the books printed from the plates become very costly, inasmuch as large editions are never needed, and the demand is slow at the best. Mr. Ruggles has invented a method of stereotyping plates of embossed characters which is so easy and cheap that everything printed for the blind might be stereotyped at once, and so preserved in a permanent form. The amount of metal used in his process is not more than one fifth of that required in the ordinary process of stereotyping, yet the plates are durable and perfectly adapted to their purpose.

The process is applicable to any embossed alphabet, whether in points or lines, but not to the type used for persons who see. In printing for the blind Mr. Ruggles would stereotype every page as soon as it was set up and corrected, so that a very small quantity of type would suffice for a book, however large, and that small amount would never be put into the press. Indeed, with Mr. Ruggles' method it would be cheaper to stereotype a book for the blind than to print it in any other way. In elementary schools for blind children the stereotype plates themselves would be exceedingly useful in giving lessons which are so often repeated that the prominences upon paper sheets would soon be flattened by the pressure of many fingers. Thus, the alphabets, the first lessons in reading, the Multiplication Table, and the Table of Weights and Measures might well be presented to the pupils on metal plates.

2. *Writing.* Intelligent blind persons can learn to write the ordinary running hand so that persons who see can read it. In writing this character they use a pasteboard guide of the size of a large sheet of paper. This board contains, at the proper intervals for lines of writing, depressions which guide the fingers of the writer in forming the letters and carrying the lines of writing across the sheet of paper which is placed upon the board. Mr. Ruggles has devised a method of making these pasteboard guides in two different patterns with the utmost accuracy, and at the same time very cheaply, so that they could be sold at four or five cents apiece, which is a small fraction of their present cost.

This writing, however, cannot be read by the blind, and it is of the utmost importance that the blind should be taught a handwriting which they can read themselves. That the blind should receive a large part of their instruction through the ear by oral teaching is inevitable; now, persons who can see have great difficulty in learning much from lectures alone, without aid from books or specimens, unless they can take notes of the lectures, and study these notes afterwards by themselves. To apprehend is one thing: to digest, remember, and reproduce is another; and mere apprehension is the least precious part of the complex processes which make up mental training. In order that they may assimilate the instruction which they receive by the ear the blind need a handwriting which they can read by touch. The Braille point-writing, which has been extensively adopted in Europe, answers this purpose well, though it is far from compact, and on that account is not well adapted

for printing. The New York system of point writing and printing, advocated by Mr. William B. Wait, Superintendent of the New York Institution for the Blind, gives the blind an available handwriting, and being more compact than the Braille writing, can be advantageously used in printing also. It is no trifling advantage of the New York system that the same characters are used for both printing and writing; for the organs of touch work so slowly, when compared with the eye, that the fewer the characters the blind must learn to distinguish the better, although of course it would be easier to learn many plain characters than a few obscure ones. Both the Braille and the New York alphabets are punched upon paper by means of a style which is held in the hand, and is guided by a metallic frame placed over the paper, the paper being held upon a backboard made of grooved metal, or of wood covered with cloth. These frames or guides are absolutely essential to both systems of writing, and upon the merits of their construction the success of either system entirely depends. The frames used in the two systems are analogous, though not alike. Mr. Ruggles has greatly improved, and at the same time cheapened, the Braille writing frame. The metallic guide of this frame in its common form holds but two lines of writing, and therefore requires frequent shifting down the page. Mr. Ruggles's guide covers the whole page, and is, of course, much more convenient. With the ordinary Braille writing-frame only one side of the paper can be used; with Mr. Ruggles's frame both sides can be used, and the writing will be equally legible, or rather tangible, on both sides of the sheet. This economy is effected by a simple contrivance analogous to that of the register in common printing. The cost of writing-frames is of consequence, because every instructed blind person should have one in common use. The New York frame now costs $3.50, and the ordinary Braille frame not less. Mr. Ruggles's frame for the Braille writing is much less expensive.

The Institutions for the Blind in this country have too much neglected instruction in point-writing. At the Perkins Institution at South Boston, certainly a leading Institution for the Blind, instruction in point handwriting is not included in the course of studies. At a meeting of the American Association of Instructors of the Blind, held at Batavia, N. Y., in August, 1874, the following resolution was adopted: —

"*Resolved*, that it is the duty of each superintendent to acquaint himself fully and practically with the Braille, the New York, and

other systems of alphabet writing and musical notation for the blind, in order that he may be prepared to form an intelligent opinion as to their respective merits as systems." This resolution implies that the superintendents of Blind Asylums, or some of them, were in August last not acquainted with these systems. The committee are inclined to agree with Mr. Wait in his emphatic statement that " the use of tangible written language is indispensable to the proper instruction and training of the blind. Without it, no system of education can be complete; without it, no school can efficiently prosecute its work." *

3. *Arithmetic.* — The blind generally use in ciphering a metallic or wooden frame full of square holes, into which type, bearing in some cases the common figures and in others certain conventional signs for the digits, are inserted. The metallic frames are heavy and costly, and they blacken the fingers; the wooden frames are expensive and fragile. Mr. Ruggles makes out of a thin block of wood with a zinc top a light, durable, and clean frame full of pentagonal holes, and in this frame, instead of nine or ten kinds of type, he uses type of but one sort. Projecting upwards on the edge of one end of this pentagonal type is a raised point, and on the edge of the other end a raised line. The point, in the five positions which the pentagon supplies, gives five tangible characters, and the line in the five positions gives the other five of the ten needed to indicate 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. A few more type give all the additional characters needed for solving algebraical problems. Although Mr. Ruggles considers the pentagonal hole and the single pentagonal type better than any contrivance now in use, yet he can cut with the ingenious machine which makes these frames, oblong, square, round, or hexagonal holes, and yet retain all the merits of his frame, though not those of his pentagonal type. Institutions or individuals preferring the ordinary square type bearing the common figures could use these type in the improved frames.

4. *Geography.* — The appliances for teaching Geography to the blind are globes in wood or papeir-maché, and maps in wood, plaster or paper, on all of which mountains, rivers, seas, towns, natural outlines, and political boundaries are indicated by elevations and depressions, or other tangible marks like pin-heads, screw-heads,

* Thirty-Ninth Annual Report of the Managers of the New York Institution for the Blind for the Year ending September 30, 1874.

parallel embossed lines, and similar devices. The best of all contrivances for imparting a knowledge of natural and political boundaries to the blind is the dissected map, from which the piece representing a country or a continent can be actually taken out and grasped in the hands. We cannot learn the shape of objects by touch alone unless we can embrace them or completely encircle them in our hands; following the outline of a body with the finger will not give an unerring conception of form. Hence the great superiority of dissected maps in wood or other tough material, as a means of informing the blind concerning the subdivisions of the earth's surface, whether natural or artificial. Maps on paper are very useful adjuncts at a later stage. The best equipped Institutions for the Blind are very ill-provided with apparatus for teaching Geography. The Perkins Institution still uses the well-worn globes and wall-maps which were made by Mr. Ruggles more than thirty years ago, when he was in the service of that institution. The New York Institution has good wooden maps for class-room use, some of which are dissected, but it has no paper atlases or other maps for individual ownership and private use. We should think school-children with eyes very poorly equipped unless each one had his own geography and atlas. These two institutions are the oldest in the country, and both have fair resources, partly derived from endowments and partly from the State. Now, wooden dissected maps for the blind ought to be as common and cheap as the dissected puzzles which are sold for the amusement of children who can see. Embossed maps should also be printed for the use of the more advanced students. Mr. Ruggles has demonstrated that such maps can be cheaply printed and made so firm that they will resist much handling.

In carrying on his experiments on embossed alphabets and maps Mr. Ruggles has lately built a new press, being the fifth press which he has constructed expressly for printing for the blind. The first and third of these presses were built for the Perkins Institution, where they were used for more than thirty years. The second press was built for the Pennsylvania Institution for the Blind, and the fourth, in 1863, for the American Printing House at Louisville. The new press is larger and more powerful than any of its predecessors, and is especially adapted to produce a large map sheet.

On the 15th of January, 1871, Mr. Ruggles addressed the following proposition to the superintendents of all Institutions for the Blind in the United States: —

"If all the Institutions for the Blind in the United States will choose a publishing committee, said committee representing all said institutions, whose duty it shall be to decide what books, maps, etc., shall be printed, the number of copies in each edition, and how to be distributed among the different blind people and institutions, I will get up an improved printing establishment, supplied with all the necessary printing-presses, all the type of various kinds for books, maps, and all other work, together with all the conveniences for electrotyping and stereotyping, and also all the appliances necessary for the manufacture of the school apparatus, and all the things needed for the successful operation of the entire mechanical departments of such an establishment, and all at my own expense, without any charge or cost to said committee or institutions, and I will also superintend the same without pay or cost to any one, my sole object being to give to the blind the benefit of all the improvements which I have thought out and perfected within the past ten years, and which I believe will be found to be nearly or quite as much in advance of the present modes of instruction, printing, etc., as the improvements which I made in 1835 were in advance of everything prior to that time."

Most of the superintendents thus addressed repeatedly expressed the warmest interest in this offer, but no common action was taken by the different institutions, and Mr. Ruggles' generous proposal has thus far been without fruition. At a convention of superintendents of Institutions for the Blind, held at Indianapolis in the summer of 1871, and at a meeting of the American Association of Instructors of the Blind, held at Boston in August, 1872, committees were appointed to confer with Mr. Ruggles in regard to his proposal, but they found no means of giving effect to Mr. Ruggles' benevolent intentions. At the next meeting of the Association, held in August, 1874, at Batavia, New York, the following resolutions were adopted: —

"*Resolved*, That the Association hereby express their very high appreciation of the munificent offer made by Mr. S. P. Ruggles, and the earnest desire that his inventions for the benefit of the blind may be made available to the greatest possible number and at the earliest practicable time.

"*Resolved*, That we believe that the purposes of Mr. Ruggles can be best carried out by a Board of Trust of his own selection, with which we shall be glad to co-operate."

There is much reason in the last resolution. The work of making books, writing-frames, arithmetic-frames, globes, and maps for the blind is a mechanical business,which, in addition to a thorough knowledge of the wants of the blind, requires ingenuity, manual skill, and familiarity with the processes and resources of many different arts and trades. There is no more propriety in carrying on this mechanical business in a school or asylum for the blind than there would be in manufacturing in a high school or college the books, slates, blackboards, and chalk of which it made use. The qualities which make a good superintendent of an asylum or a good teacher of blind persons are very seldom combined in the same individual with the qualities which go to make a successful head of a machine-shop or of a printing-establishment. There should be in this country a separate corporation, devoted exclusively to manufacturing the implements and books which are needed by the blind, having no purpose whatever of money-making, and conducted in the interest of all the blind and of all the institutions which care for them. The corporation would be, in the main, a charitable corporation, although there is no reason why it should not have some receipts as well as expenses. According to the United States census of 1870, there were then but 20,320 blind persons in the whole country, of whom less than 4,000 were under twenty years of age. It is possible, perhaps probable, that the number is considerably understated, but if, with Mr. F. B. Sanborn, we should add forty per cent to these figures, the number of blind persons in condition to make use of books, maps, writing-frames, etc., would still be too small to make the business of manufacturing these articles remunerative.

It is very desirable that this work of charity should be begun, in accordance with the suggestion of the Association of Instructors of the Blind, by the organization of a permanent corporation which should take advantage of Mr. Ruggles' public-spirited offer to place his skill, his time, and all his inventions and machinery, at the service of the blind. The work of such a corporation, begun with the help and under the guidance of Mr. Ruggles, would become a permanent charity of a very useful sort.

The committee are convinced that endowment would be necessary to carry on the work in a satisfactory manner, and they recommend the Social Science Association to take all measures in their power to promote the organization of the corporation and secure for it an adequate endowment.

American Social Science Association.

5 PEMBERTON SQUARE, BOSTON.

This Association, founded in 1865, has for its object to organize and concentrate forces now working at random. A marked feature of the time is the desire to investigate and ameliorate the conditions of human life. But this impulse, too often fitful and ill directed, is apt to defeat itself. Thus, all competent authorities agree that the overflowing and unregulated spirit of charity is one of the most hurtful and dangerous of our social tendencies. The British Association, in successful operation since 1857, aims to propose suggestions of reform for the attention of the ministry. Such an agency appears to be much more necessary in this country, not only from the inefficiency and unsteadiness of executive government, but from the want of connection between the States. Upon the great subjects of Finance, Taxation, Education, Jurisprudence, Health, Charities, Pauperism, Prisons, Railways, Insurance, Police, etc. etc., not to speak of the lack of system in individual States, there are or may be thirty-seven different systems, unconnected and without reference or advantage to each other. To bring into closer relations men of special talents and acquirements in different States, and, while excluding frivolities and crotchets, to establish general principles as against empiricism in the conduct of society, is the purpose for which we ask the sympathy, not only of the friends of humanity but of every lover of his country.

AMERICAN SOCIAL SCIENCE ASSOCIATION.

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The fee for membership is $5, and all are invited to become members who feel an interest in our work. All members are entitled to receive the year's publications of the Association, "The Journal of Social Science" being the principal of these. Seven numbers of this Journal have been issued, and No. 8 may be expected in the autumn of 1875. The price of Nos. 1, 2, 3, 4, and 5 is $1.50 each; of Nos. 6 and 7, $1.00 each.

Special papers appearing in "The Journal of Social Science" may be ordered separately, when in print, at the rate of 10 cents for every 15 pages.

All the publications of the Association, including Nos. 2, 3, 5, 6, and 7 of "The Journal of Social Science," may be ordered of the Secretary of the Association, 5 Pemberton Square, Boston; or of the Publishers (Hurd & Houghton, New York; The Riverside Press, Cambridge, Mass.).