Manual for the Printing of Literary Texts and Concordances by Computer

PRELIMINARY EDITION

ROBERT JAY GLICKMAN

and

GERRIT JOSEPH STAALMAN

UNIVERSITY OF TORONTO PRESS

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R. J. G.
G. J. S.

C O N T E N T S

I N T R O D U C T I O N

PRORA is a series of computer programs designed primarily for scholars who work in the fields of literature and linguistics; who have little or no knowledge of how computers operate, but who would utilize computer technology if it were possible to do so without sacrificing their own research time in order to learn the details of computer science.

The name PRORA originated as an abbreviation of Programs for Research On Romance Authors. At present, this designation is a misnomer, for, in addition to processing texts written in the Romance languages, PRORA can handle material written in other languages that use the Latin alphabet (e.g., Czech, Dutch, English, Finnish, German, and Swedish).[1]

The philosophy behind all the programs is that intervention by the scholar should be limited to decision-making in the scholar's own field of competency (literature or linguistics, not computer science or technology); that complex pre-editing and coding of texts should be avoided; and that secretarial assistance should be rendered by a competent typist who has taken a short course in keypunching.

The first three programs in the series are described in this Manual for the Printing of Literary Texts. Their capabilities may be summarized as follows:

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[1] The applicability of PRORA to any given language can be determined by an examination of Chart I (see inside back cover). This chart shows all letters, diacritics, punctuation marks, and special signs that can be printed with PRORA.

PRORA I makes a tape-record of a literary text which has been transcribed onto IBM cards according to conventions established by the scholar.

PRORA II prints the text in "standard" format. The characteristics of this format are illustrated on pp. 4-7.

PRORA III prints the text in a "special" format which allows the scholar to make a highly flexible concordance for textual analysis. The nature and uses of this format are discussed on pp. 8-15.

In order to implement these programs, the following steps are taken:

1. The scholar chooses a text, selects a suitable printing format, and completes a simple form showing how the text should be copied.
2. The secretary transcribes the material onto IBM cards and assembles the input deck.
3. The Data Center uses PRORA I to process the input deck, and uses PRORA II or III to print the text in the desired format.
4. The scholar reads the printout and makes corrections as he would on any galley proof.
5. The secretary examines the annotated copy, extracts all "errata cards" from the original deck, and re-punches those cards in sequential order.
6. The Data Center prints a "correction list" from the corrected cards.
7. The scholar checks the "correction list" and has the corrected cards inserted into the original deck.
8. The Data Center processes the corrected input deck and prints the text in final form. (For critical and variorum editions, final printout is delayed until PRORA II has been implemented

and the results annotated. The capabilities of PRORA IV are summarized on pp. 15-16.)

Figure 1

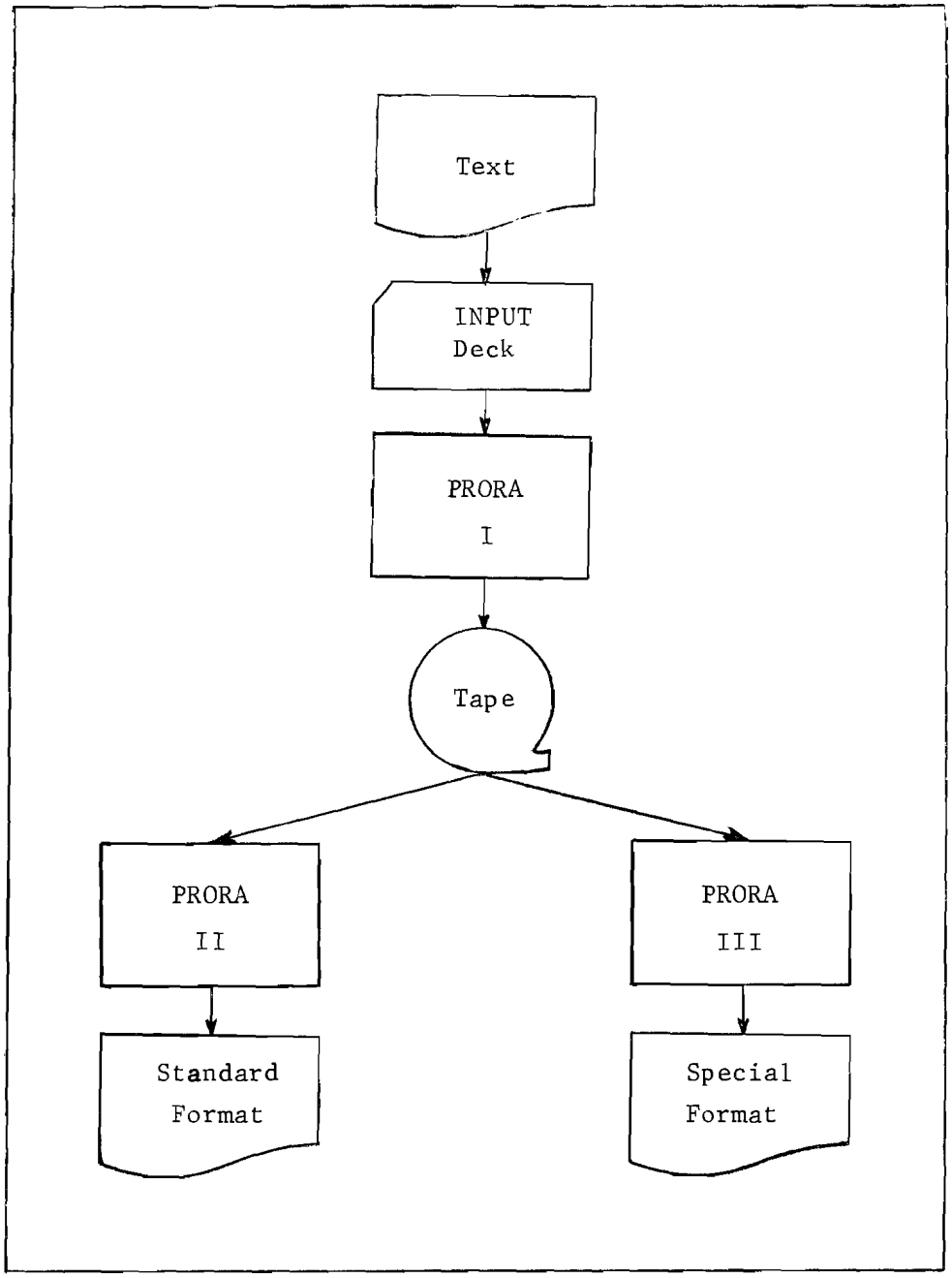


Figure 2a

1

SUEÑO DE GLORIA

Apoteosis de Gustavo Moreau

Sombra glacial de bordes argentados
enluta la extensión del firmamento,
donde vagan los discos apagados
de los astros nocturnos. Duerme el viento
entre las ondas del Cedrón plomizas
que hasta el sombrío Josafat descienden
como a un foso inundado de cenizas,
y en rápida carrera luego ascienden,
salpicando las rocas erizadas
en vez, lanzando pavorosas quejas,
llegan, por las tinieblas ahuyentadas,
enfermizando sus alas, las cornejas.

De nacarina luz a los reflejos
que clarean el lóbrego horizonte,
Jerusalén destácase a lo lejos
cernida al pie del solitario Monte
de los Olivos. Ramas erigidas
en la aspereza de sus firmes flancos,
parecen lanzas de metal hundidas
en cuerpos que a sus áridos barrancos
tintos en sangre fueron. Mortal frío
del valle solitario se evapora,
el bosque ostenta fúnebre atavío,
siente el mundo nostalgia de la aurora,
silencio aterrador el aire puebla
y semeja la bóveda del cielo
encrespada de hórrida tiniebla,
un palio de sombrío terciopelo.

* * *

Chispas brillantes, como perlas de oro,
encléndense en la gélida negrura
de la celeste inmensidad. Sonoro

STANDARD FORMAT

The samples shown in Figures 2a and 2b illustrate the features of PRORA II. It is possible to modify the page-layout by choosing certain options. The following is a list of basic printout features and options:

1. Page numbers. Two options (b, c) are available:
   a. Pages are numbered automatically by the computer.
   b. Page numbers may be printed in the upper left- and upper right-hand corners of each page.
   c. Page numbers may be suppressed.
2. Headings. Two options (b, e) are available:
   a. Headings are printed on title pages only.
   b. A title is printed in capital letters on any print-line selected by the user and is centered over the body of the text.
   c. A subtitle (if any) is printed in upper- and lower-case letters two lines below the title and is centered with respect to the title.
   d. A dedication (if any) is printed in upper- and lower-case letters two lines below the subtitle, or two lines below the title in cases where no subtitle is present. The dedication is right-justified with the longest line of text on the page.
   e. The keypunch operator may cause additional blank lines to be inserted between title and subtitle, subtitle and dedication, dedication and text.

Figure 2b

	1	
	2	2
	3	
	4	
	5	
1"	6	
	7	
	8	
	9	
	10	
	11	
2"	12	
	13	
	14	
	15	
	16	
	17	
3"	18	
	19	
	20	
	21	
	22	
	23	
4"	24	
	25	
	26	
	27	
	28	
	29	
5"	30	
	31	
	32	
	33	
	34	
6"	35	
	36	
	37	
	38	
	39	
	40	
	41	
7"	42	
	43	
	44	
	45	
	46	
	47	
8"	48	
	49	
	50	

rumor de alas de nítida blancura
óyese resonar en el espacio
que se vela de nubes coloreadas
de nácar, de granate, de topacio
y amatista. De estrellas coronadas
las sienes, y la rubia cabellera
esparcida en las vestes azuladas,
como flores de extraña primavera,
legiones de rosados serafines,
con el clarín de plata entre las manos,
anuncian de la tierra en los confines,
el juicio universal de los humanos.
Tras ellos, entre las brumas opalinas
de matinal crepúsculo radioso,
como un ídolo antiguo sobre ruinas,
divino, patriarcal y esplendoroso,
asoma el Creador. Nimbo fulgente,
cuajado de brillantes y rubíes,
luz proyecta en el mármol de su frente;
dalmática de pliegues carmesíes
rameados de oro, envuelve sus espaldas;
haz de luces agita entre la diestra
y chispea erigido en su siniestra
áureo globo, esmaltado de esmeraldas,
perlas, zafiros y ópalos. Irisa
el haz la seda de su barba cana,
vaga en sus labios paternal sonrisa,
brilla en sus ojos la piedad cristiana
y parece, flotando en la serena
atmósfera de luz que lo corona,
más que el Dios iracundo que condena,
el Dios munificente que perdona.

* * *

Al son de los clarines celestiales
dilatado en los ámbitos del mundo,
álzanse de sus lechos sepulcrales
como visiones de entre lodo inmundo,
revestidos de formas corporales,
los míseros humanos. Se respira

3. Line numbers. Two options (b, c) are available:

   a. Lines of text are numbered by the keypunch operator, not by the computer.

   b. Although line numbers must be coded onto Text Cards during the keypunching phase, they may be suppressed at printout.

   c. If line numbers are printed, they may be followed by a punctuation mark of the user's choosing (e.g., a period).

4. Text. Two options (a, b) are available:

   a. The vertical position of the first line of text on each page is determined by the user. In the samples, the first line of text appears on print-line 14 of a title page (Figure 2a) and on print-line 8 of a non-title page (Figure 2b).

   b. The number of lines per page is determined by the user. In the samples, 35 lines of text appear on a title page (i.e., print-lines 14-48 are used).

   c. The length of lines is determined by the source document in the case of poetry, or by the user in the case of prose. However, no printed line can have more than 70 characters and blanks.

   d. Some degree of right-justification is possible for prose texts (see pp. 81-83).

Figure 3a

N 4
1- 13

LA MUERTE DE MOISES

Leyenda talmúdica

(A la Sra. Aurelia
Castillo de González)

I

Ancha línea de púrpura franjeaba
el azul horizonte, donde el astro
dorado de la tarde se ocultaba,
y el cielo blanquecino semejaba
un ánfora volcada de alabastro.

Flotaban en el aire los aromas
de lentiscos, nopales y palmeras
crecidos de la mar en las riberas,
y amorosas bandadas de palomas
volaban a posarse en las higueras.

Las copas de los verdes sicomoros
mecidas por los vientos del desierto,
mezclaban su rumor a los sonoros

---

mugidos prolongados de los toros
huyendo de la margen del Mar Muerto.

N 4
1- 13

N 4
14- 28

LA MUERTE DE MOISES (cont.)

mecidas por los vientos del desierto,
mezclaban su rumor a los sonoros

---

mugidos prolongados de los toros
huyendo de la margen del Mar Muerto.

Buitres voraces de potentes garras
cerníanse en las fértiles campiñas,
y se oía la voz de las cigarras
cantar entre los troncos de las parras
que florecían de Engadí en las viñas.

Del poniente a los últimos destellos,
con el beduino sobre el alto lomo,
cruzaban las legiones de camellos
llevando en cofres de bruñido plomo
aloe y mirra, incienso y cinamomo.

Descendía la noche en el camino
y extinta ya la vespertina lumbre,
agobiado de inmensa pesadumbre

---

viόse subir a un viejo peregrino
del Moriah negro la arenisca cumbre.

(Reduced 10 %)

SPECIAL FORMAT

The samples shown in Figures 3a and 3b illustrate the features of PRORA III. It is possible to modify the page-layout by choosing certain options. The following is a list of basic printout features and options:

1. Page dimensions.
   a. Each page that is printed by the computer is reproduced photographically on a "CONTEX CARD".
   b. Recommended dimensions for CONTEX CARDS are 5" x 7".
   c. It is suggested that each printed page be photo-reduced 10 percent.
   d. For esthetic and utilitarian reasons, no line of text should contain more than 60 characters, and no page should be more than 30 print-lines long.
2. Page numbers. One option (b) is available:
   a. Pages are numbered automatically in the right-hand margin only.
   b. Page numbers may be located on any print-line between 5 and 29. (In the samples, the page number appears on print-line 15.)
3. Code numbers. No options:
   a. Code numbers are automatically printed in the upper left- and upper right-hand corners of each page.
   b. "Book" and "Part" codes appear on print-line 2 and are underscored.
   c. "Line" codes (referring to all numbered text-lines on the page) appear on print-line 3.

Figure 3b

I 1
1- 15

CANTO I

I 1
1- 15

1 Nel mezzo del cammin di nostra vita
2 mi ritrovai per una selva oscura,
3 chè la diritta via era smarrita.
4 Ah quanto a dir qual era è cosa dura
5 esta selva selvaggia e aspra e forte,
6 che nel pensier rinnova la paura!
7 Tant' è amara che poco è più morte;
8 ma per trattar del ben ch' io vi trovai, 1
9 dirò de l' altre cose ch' io v' ho scorte.
10 Io non so ben ridir com' io v' entrai;
11 tant' era pieno di sonno a quel punto
12 che la verace via abbandonai.
13 Ma poi ch' i' fui al piè d' un colle giunto,
14 là dove terminava quella valle
15 che m' avea di paura il cor compunto,

---

guardai in alto, e vidi le sue spalle
vestite già de' raggi del pianeta
che mena dritto altrui per ogni calle.

I 1
16- 30

CANTO I (cont.)

I 1
16- 30

Ma poi ch' i' fui al piè d' un colle giunto,
là dove terminava quella valle
che m' avea di paura il cor compunto,

---

16 guardai in alto, e vidi le sue spalle
17 vestite già de' raggi del pianeta
18 che mena dritto altrui per ogni calle.
19 Allor fu la paura un poco queta
20 che nel lago del cor m' era durata
21 la notte ch' io passai con tanta pieta.
22 E come quei che, con lena affannata,
23 uscito fuor del pelago a la riva, 2
24 si volge a l' acqua perigliosa e guata,
25 così l' animo mio, ch' ancor fuggiva,
26 si volse a rietro a rimirar lo passo
27 che non lasciò già mai persona viva.
28 Poi ch' ei posato un poco il corpo lasso,
29 ripresi via per la piaggia diserta,
30 sì che 'l piè fermo sempre era 'l più basso.

Ed ecco, quasi al cominciar de l' erta,
una lonza leggiera e presta molto,
che di pel maculato era coverta.

(Reduced 10 %)

4. Headings. One option (e) is available:

   a. Complete headings (i.e., title, subtitle, and dedication) are printed on title pages only.

   b. A title is printed in capital letters on print-line 2, and is centered over the body of the text.

   c. A subtitle (if any) is printed in upper- and lower-case letters on print-line 4, and is centered under the title.

   d. A dedication (if any) is printed in upper- and lower-case letters two lines below the subtitle (or title, if no subtitle is present), and is right-justified with the longest line of text on the page.

   e. Additional blank lines may be inserted between title and subtitle, subtitle and dedication, dedication and text. This is done by the keypunch operator when Text Cards are prepared.

   f. That portion of the title which appears on print-line 2 of the title page is repeated on print-line 2 of each subsequent page in a given "Part"; it is followed by the abbreviation (cont.); and it is centered over the body of the the text.

5. "Repeat" lines. One option (a) is available:

   a. A variable number of "repeat" lines (at least 1, but usually not more than 6) is printed above and below the body of the text. Those at the top are repetitions of the last numbered lines of text on the preceding page; those at the bottom anticipate the first numbered lines on the following page.

   b. Each group of "repeat" lines is separated from the body of

Figure 4a

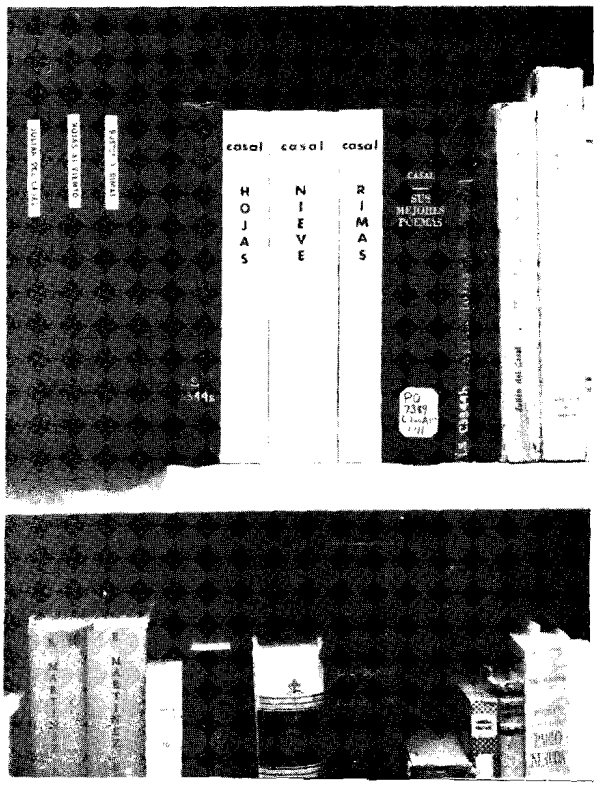
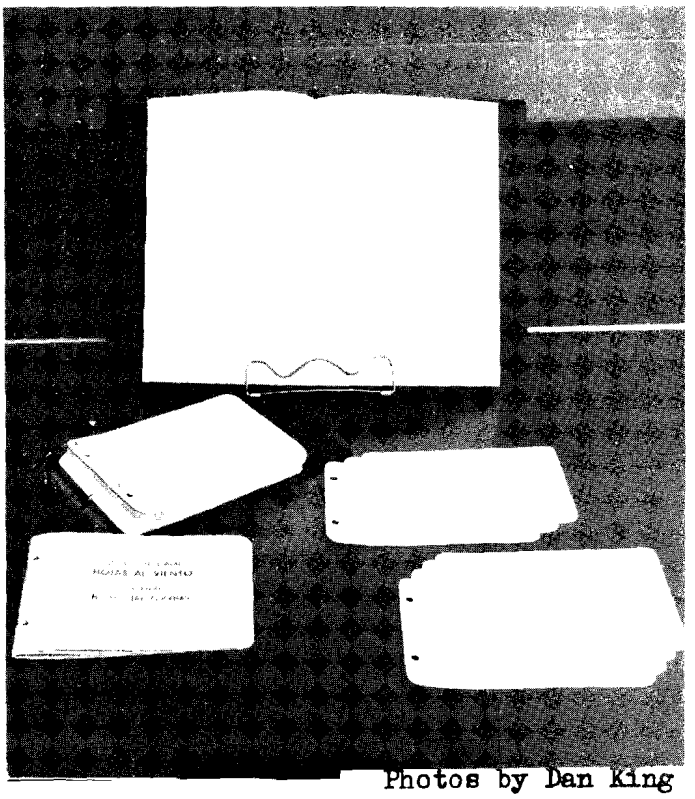


Figure 4b



Photos by Dan King

Original editions of Hojas, Nieve, and Rimas: 308 pp. Special Format "concordance edition" contains 329 pp. I.e., instead of being several hundred times longer than the original editions (as would be the case if a traditional concordance format were used), the new "concordance edition" is only 7 % longer than the original editions. Text is reproduced photographically on paper of index card weight for easy handling.

the text by page-dividers.

c. "Repeat" lines are not numbered.

d. Title pages have "repeat" lines only at the bottom (provided, of course, that the text is more than one page long).

e. The last page of a "Part" has "repeat" lines only at the top

6. Body of the text. Two options (a, c) are available:

a. The number of lines per page is fixed by entries made on the Page-data Card of PRORA I (described on pp. 21-22). It should be remembered that the number of text-lines contained in the body is influenced by the number of "repeat" lines desired, and by the fact that no page should be more than 30 print-lines long.

b. Line numbers are printed to the left of each text-line in the body. (This is in contrast with "repeat" lines, which are never numbered.)

c. Line numbers may be followed by a punctuation mark of the user's choice (e.g., a period).

7. Use of Special Format printouts. As indicated in Par. 1, each text that is processed by PRORA III is photographically reproduced on CONTEX CARDS. When not in use, the CONTEX CARDS are shelved in a container that is stamped with the author's name and the title of the work (see Figure 4a).

When it is necessary to examine the text, the cards are withdrawn from their container and placed in the loose-leaf binder that has been specially designed for them (see Figure 4b).

If the reader becomes interested in a particular word and

Figure 5

(Photo-reduced by 25%)

D	F	Word	Poem/Line
8	11	o	2/8; 2/40; 10/11; 24/14; 25/10; 32/13; 38/36; 40/6; 43/23; 43/42; 43/50
1	1	oasis	30/13
1	1	obediente	45/6
1	1	obscurecer	39/8
1	1	obscurecido	41/51
7	8	obscuro	3/3; 10/45; 22/12; 24/14; 29/10; 38/33; 38/34; 46/2
2	2	observar	8/7; 25/50
1	1	obstruir	41/11
2	2	ocaso	5/13; 38/11
1	1	oceano [sic]	47/35
3	4	ocultar(se)	7/5; 8/34; 8/42; 27/5
7	8	oculto	5/26; 5/60; 10/2; 12/28; 20/28; 31/10; 42/13; 47/11
1	1	odalisca	47/45
1	1	Ofelia	49/8
4	4	ofrecer	8/12; 25/48; 28/5; 47/69
1	2	ofrenda	28/T; 28/6
6	7	oh	3/83; 9/9; 10/29; 10/42; 20/1; 36/13; 46/21
2	2	oído	8/4; 31/9
11	12	oír	6/44; 8/52; 10/43; 16/7; 23/15; 25/32; 34/16; 37/5; 40/24; 43/66; 49/26; 49/29
12	14	ojo	3/90; 3/107; 4/17; 5/38; 20/21; 31/24; 40/4; 40/30; 41/9; 43/48
3	3	ola	6/21; 12/7; 22/14
1	1	Olimpia	23/T
1	1	Olimpo	49/28
2	2	olvidado	3/52; 46/1
10	11	olvidar(se)	2/35; 17/38; 20/8; 31/22; 38/18; 41/17; 41/56; 43/68; 45/43; 47/58; 49/27
6	9	olvido	1/3; 3/16; 3/102; 8/14; 8/24; 8/47; 15/20; 23/35; 38/34
6	10	onda	13/7; 32/3; 32/7; 38/34; 41/24; 41/31; 43/4; 43/29; 43/59; 49/19
1	1	ondear	15/13
1	1	ondulante	3/19
1	1	opaco	2/30
1	1	opalino	33/11
1	1	ópalo	31/15
1	1	opresión	9/6
1	1	oprimido	17/52
2	2	oprimir	9/3; 34/8
1	1	opulencia	47/60
1	2	ora	2/51; 2/52

wishes to trace its use in the corpus, he proceeds as follows:

a. He consults the word-index that has been prepared by PRORA V (see Figure 5). This index shows the precise location of each occurrence of the word in the corpus.

b. He extracts all cards on which the word occurs.

c. He analyzes the contexts, establishes a set of meaningful categories, moves each context of the word into its proper category, and takes notes on his findings. (Since every page contains a small amount of text, each occurrence of a "significant" word tends to fall on a separate CONTEX CARD. Thus, it is not necessary to copy the text, as is often the case when traditional concordances are used, but merely to comment on it.)

d. After completing his analysis, he restores the cards to sequential order and either keeps the text in the binder or returns it to the container for shelving.

FUTURE PROGRAMS

Three additional program series are now under development to aid the scholar in his research endeavors:

PRORA IV will make it possible to construct and update a master tape-file of all words appearing in a given text or group of texts. The scholar will be able to add the following types of information to the file originally produced by the computer: the lemma of each word in the corpus,[1]

[1] The term lemma is defined by Roberto Busa as "a title of the paradigm which groups all the inflections of an inflected word" ("An Inventory of Fifteen Million Words," in Literary Data Processing Conference Proceedings, New York: IBM-MLA, 1964, p. 70). Thus, the lemmas of excepciones (Spanish noun), pulisco (Italian verb), and jeunes (French adjective) would be excepción, pulire, and jeune.

the exact translation of the word in its specific context, variants of the word which appear in different editions, and analytical data concerning the word and its contextual environment.

PRORA V will enable the scholar to retrieve information contained in the master tape-file and to arrange this information in the form of dictionaries, word-indexes, and/or frequency lists.

PRORA VI will produce complete or partial concordances of the text in question.

PRORA I

P A R T I

I N P U T

PRORA I makes an electromagnetic tape-record of a literary text which has been transcribed onto IBM cards according to conventions established by the user. The following machines are required:

A. An IBM 026 Keypunch with FORTRAN keyboard.

B. An IBM 1401 or 1460 Computer with an 8K memory and all special 1401 features except "divide" hardware.

C. An IBM 1402 Card Reader.

D. An IBM 1403 Printer with standard print-chain.

E. An IBM 7330 Tape Unit or its equivalent.

Figure 6 gives information about the types of cards that compose the input deck. This information is broken down as follows: the name of each card type, the suggested color of each type, the number of cards per type, the contents of the cards, and the pages in this manual where each card type is discussed.

Figure 6

CARD TYPE	COLOR	NUMBER	CONTENTS	PAGES
Header Card	Green	2	Project title & description	20
Page-data Card	Brown	1	Printout boundaries	21-23
Table Card	Salmon	4	Code-conversion data	25-71
Text Card	Natural	Variable	Contents of text	72-83
End-of-job Card	Yellow	1	End-of-job signal	86-87
End-of-project Card	Red	1	End-of project signal	84-85

I. HEADER CARDS

Two Header Cards are used for purposes of identification. The information that is recorded on these cards becomes the "header label" of the tape that will be written by PRORA I.[1]

A. Header Card 1. Columns 1-70 are reserved for the title of the project and for any other data that is considered important. The following example illustrates the type of data that may go on Header Card 1:

PRORA I, GLICKMAN-STAALMAN, ITALIAN/HISPANIC, TORONTO.

B. Header Card 2. Columns 1-60 are available for any additional information that the user may wish to record. For example:

TAPE-WRITE, CASAL, HOJAS AL VIENTO, 18 APRIL 1965.

In order to simplify and standardize procedure, all entries that are to be punched on the Header Cards should first be recorded in Section A of the SPECIFICATIONS FORM that accompanies this Manual. Read the introductory statements at the top of the FORM; then complete Section A in a manner appropriate for your own project.

---

[1] See Tape Format, pp. 90-92.

II. PAGE-DATA CARD

The Page-data Card establishes the upper and lower boundaries of the text on each printout page. Only eight columns are utilized on the card. These columns are divided into four fields which affect the position of the title, the first line of text on title pages, the first line of text on non-title pages, and the last line of text on all pages, respectively.

A. The Title. Columns 1-2 show where the title should be printed. For example, if you want the title to appear on print-line 8, punch a 0 in column 1 and an 8 in column 2. The zero is necessary in column 1 because no blank spaces may appear in any of the usable columns of the Page-data Card.

B. The First Line of Text on Title Pages. Columns 3-4 show where the first line of text should be printed on title pages.[1] For example, if you want the text to begin on print-line 14, punch a 1 in column 3 and a 4 in column 4.

C. The First Line of Text on Non-title Pages. Columns 5-6 show where the first line of text should be printed on non-title pages. For example, if you want the text to begin on print-line 8 of such pages, punch a 0 in column 5 and an 8 in column 6.

D. The Last Line of Text on a Page. Columns 7-8 show where the last line of text should be printed on title and non-title pages. For example, if you want each page to have a maximum length of 45 print-lines, punch a 4 in column 7 and a 5 in column 8.

---

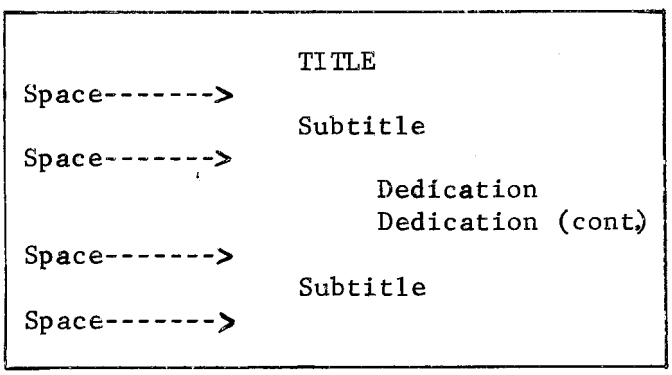
[1] On title pages only, the first line of text is sometimes printed below the position stipulated in columns 3-4. The reason why this happens is explained in the paragraphs devoted to the Automatic Bypass Feature (see below).

E. Automatic Bypass Feature. Under special circumstances, PRORA bypasses the data entered in columns 3-4 and moves the first line of text on title pages to a position below the one stipulated on the Page-data Card. This occurs automatically and affects only a certain kind of title page.

Every title page has a "heading block" which precedes the text proper. Depending on the work in question, the "heading block" will include some or all of the following: title + space, subtitle + space, and dedication + space.[1] If the number of lines taken up by the "heading block" equals or exceeds the figure entered in columns 3-4 of the Page-data Card, PRORA will automatically bypass this entry and will begin printing the text on the first line that becomes available after the "heading block". Thus, if the components of the "heading block" take up 9 lines, PRORA will not begin printing on line 14 (see B, above), but will begin on line 17 of the title page. On all subsequent pages, however, the first line of text will appear on the print-line indicated in columns 5-6 of the Page-data Card.

---

[1] After the title + space combination, the order and/or number of "heading block" components may vary. On p. 80, for instance, we find a poem whose "heading block" consists of the following elements:



F. The SPECIFICATIONS FORM. In order to simplify and standardize procedure, all decisions concerning Page-data Card entries should be made with the help of Section B of the SPECIFICATIONS FORM that accompanies this Manual. Turn to that FORM now and do the following exercises:

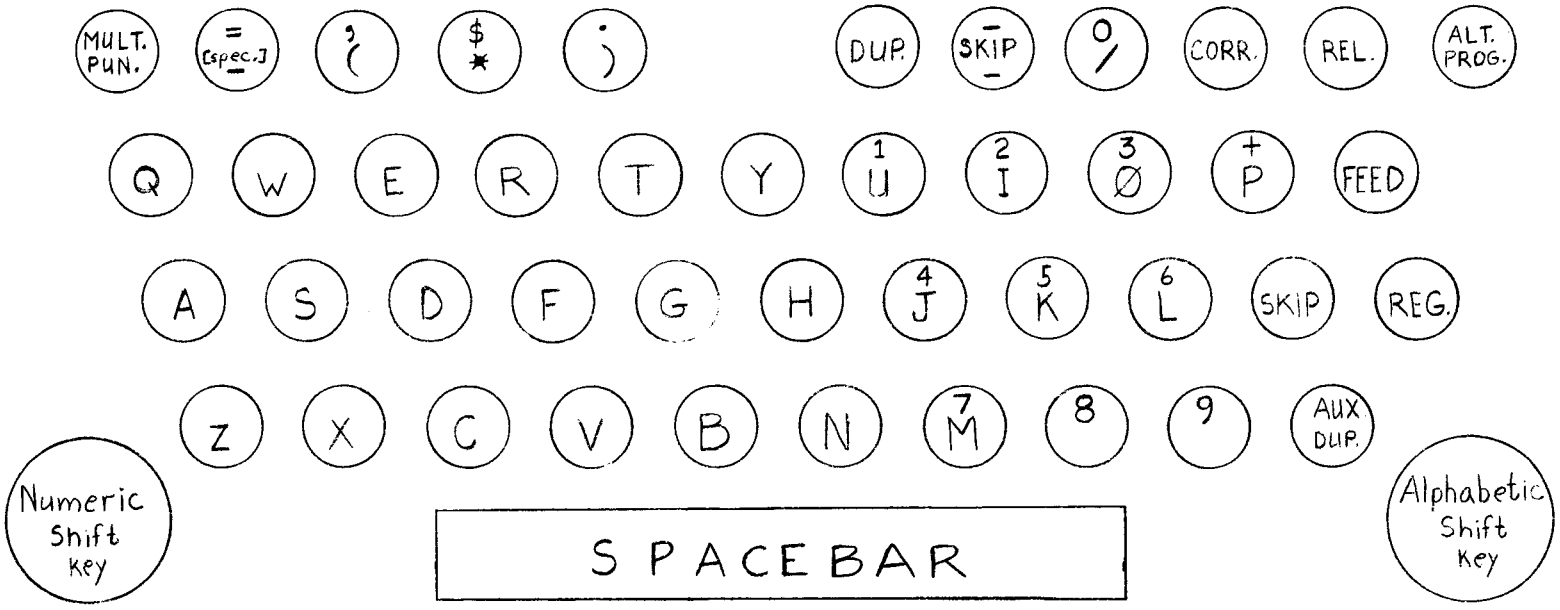
1. "Standard" format printout (PRORA II). Examine the samples shown in Figures 2a and 2b, pp. 4 - 6 . Then, using Section B of the SPECIFICATIONS FORM, indicate the print-position of titles, the first line of text on title pages, the first line of text on non-title pages, and the last line of text on all pages of the book from which the illustrations were taken. Check your answers against those found on pp. 107 ff.

2. "Special" format printout (PRORA III). Examine the samples shown in Figure 3a, p. 8 . Then, using Section B of the SPECIFICATIONS FORM, indicate the print position of titles, the first line of text on title pages, the first line of text on non-title pages, and the last line of text on all pages of the book from which the illustrations were taken. Check your answers against those found on pp. 107 ff.

3. User's choice. At the bottom of page 1 of the SPECIFICATIONS FORM, there is a PRINT-LINE GUIDE which is to be used when you make calculations about page format. Take a literary text which you would like to see printed by computer, and, with the help of the PRINT-LINE GUIDE, set up a format that would be appropriate for the text. Make entries concerning the print position of titles, the first line of text on title pages, the first line of text on non-title pages, and the last line of text on all pages in the boxes provided in Section B of the SPECIFICATIONS FORM.

Figure 7

FORTRAN KEYBOARD



III. TABLE CARDS

A. General Information. Input is prepared on an IBM 026 Keypunch equipped with a FORTRAN keyboard (see Figure 7).[1] When struck, each key makes unique perforations on the cards that move through the machine. A total of 47 distinct hole combinations can be punched by single keystrokes.[2]

Output is produced by an IBM 1401 Computer and an IBM 1403 Printer. When fitted with a special print-chain, which we shall refer to as the Library chain, the 1403--controlled by PRORA--is capable of printing 97 different characters.[3]

Since the Library chain has more characters than those available on the FORTRAN keyboard, it is necessary to establish a set of keypunch conventions which, when interpreted by the computer, will activate all of the required print-chain characters. Four TABLE CARDS make this input-output conversion possible.[4]

The following explanation highlights the crucial role that the 4 TABLE CARDS play in the overall system.

---

[1] The FORTRAN keyboard was chosen because it was assumed that most users of PRORA would be working at universities, where this keyboard is more readily available than any other.

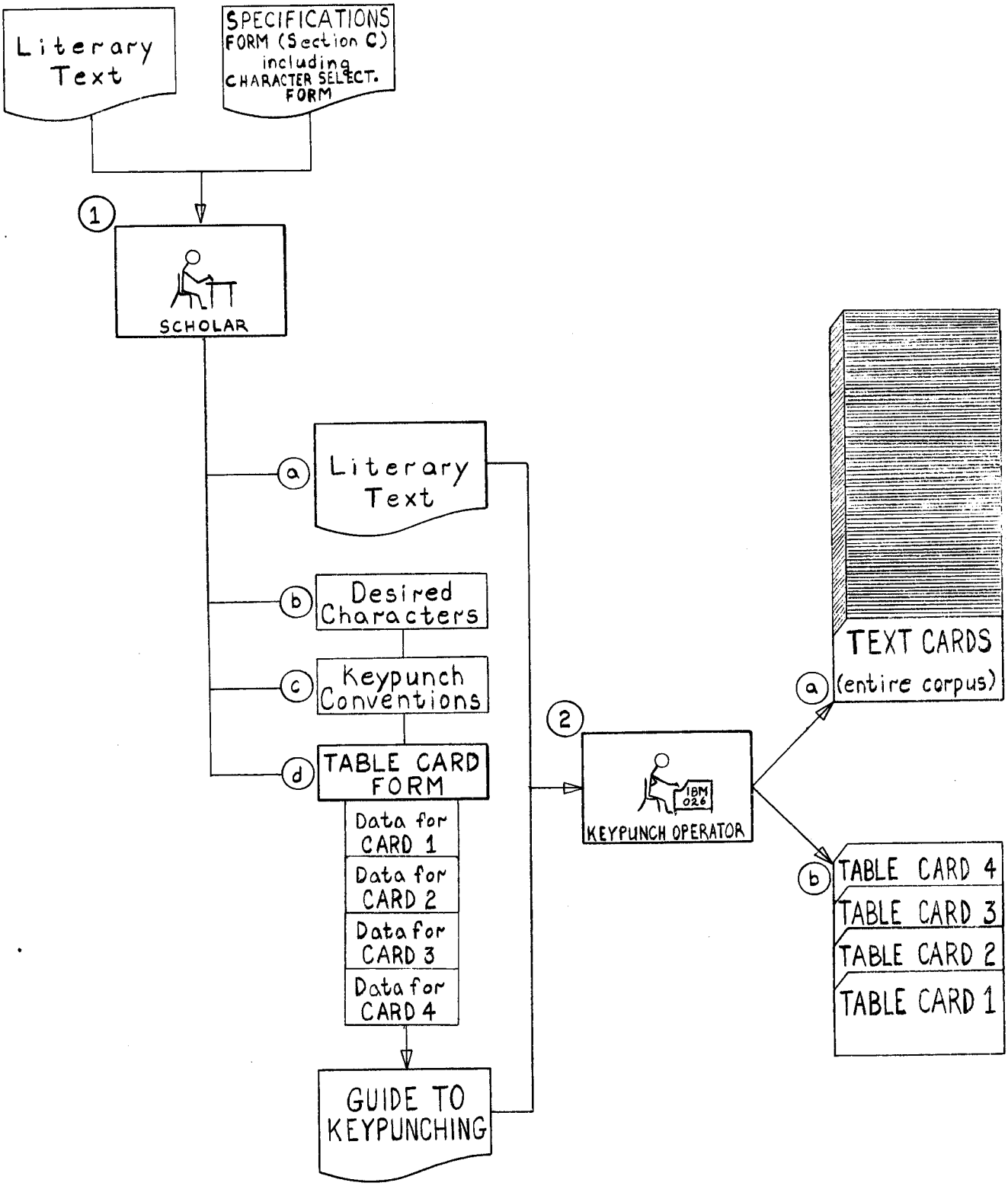
[2] This total does not include the blank that results when the spacebar is depressed, since the spacebar produces no holes in the cards.

[3] This total includes the normal blank between words and the exclamation point (which is a special printout combination). A detailed list of all print-characters is given on Chart I (see inside back cover).

Besides the characters now available on the Library chain--including the at-sign (@), the underscore (_), and the plus-sign (+), which cannot be printed when PRORA is implemented--there is room for additional characters. These form the group of "potential" characters which is discussed on p. 36, n. 1.

[4] The function of these cards is summarized on pp. 70-71.

Figure 8


Literary Text
SPECIFICATIONS FORM (Section C) including CHARACTER SELECT. FORM
1
SCHOLAR
a
Literary Text
b
Desired Characters
c
Keypunch Conventions
d
TABLE CARD FORM
Data for CARD 1
Data for CARD 2
Data for CARD 3
Data for CARD 4
GUIDE TO KEYPUNCHING
2
IBM 026
KEYPUNCH OPERATOR
a
TEXT CARDS (entire corpus)
b
TABLE CARD 4
TABLE CARD 3
TABLE CARD 2
TABLE CARD 1

1. The scholar. As shown in Figure 8, the scholar works with a Literary Text and with Section C of the SPECIFICATIONS FORM.

   a. He examines the text which he has chosen to reproduce.

   b. He determines which print-characters are needed for an accurate printing of the text.

   c. Following instructions in Section C of the SPECIFICATIONS FORM, he completes the CHARACTER SELECTION FORM.[1] In this way, he establishes a set of keypunch conventions that will be used to transcribe all print-characters which, though present in the text and on the Library chain, cannot be obtained by striking a corresponding key on the FORTRAN keyboard. For example:

      1) Needed, but not on keyboard: ú í ó á é

      2) Punch these as substitutes: 1 2 3 4 5

      Having established these conventions, the scholar records them in Rows (1) and (2) of the GUIDE TO KEYPUNCHING, which is at the bottom of the CHARACTER SELECTION FORM.

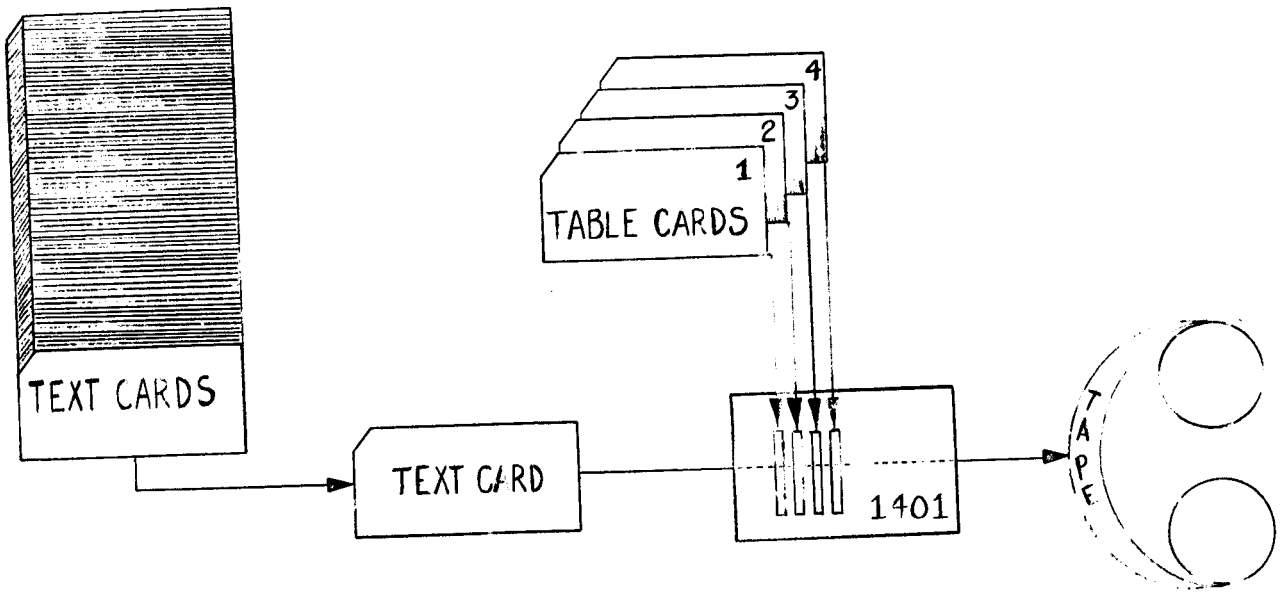
   d. He then fills in the TABLE CARD portion of the GUIDE TO KEYPUNCHING (i.e., Rows (4) to (7)). By so doing, he indicates how the 1401 computer should interpret his keypunch conventions when it processes the text.

These four steps require approximately one hour of the scholar's time; yet they make it possible for the computer to print a text of any length, or a series of different texts that are written in the same language.

---

[1] Located on p.2a of the SPECIFICATIONS FORM. The CHARACTER SELECTION FORM should be detached before it is filled out.

Figure 9



2. The keypunch operator. Once the scholar has made his basic decisions, he gives the text to the keypunch operator, and, at the same time, supplies her with the GUIDE TO KEYPUNCHING. This shows what conventions should be used when the corpus is punched on TEXT CARDS,[1] and what information should be recorded on the 4 TABLE CARDS that govern the interpretation of those conventions.

Equipped with the GUIDE TO KEYPUNCHING and the text that is to be copied, the operator:

a. transcribes the text onto TEXT CARDS, one line per card, and

b. records, on the 4 TABLE CARDS, all data shown in Rows (4) to (7) of the GUIDE TO KEYPUNCHING.

3. PRORA I. When the keypunch operator has completed her part of the job, the entire input deck is processed by the 1401. The computer scans each TEXT CARD one character at a time, interprets the characters according to instructions given on the 4 TABLE CARDS, and make a tape-record of the entire corpus. This phase of the operation is illustrated in Figure 9.

As a result of this procedure, a line of text such as:

Pugna por desecharla: ¡anhelo inútil!

which was punched, according to the scholar's instructions, as:

*PUGNA POR DESECHARLA= 9ANHELO IN1TIL/

can be printed in its desired form when PRORA II and III are implemented:

Pugna por desecharla: ¡anhelo inútil!

---

[1] The term TEXT CARD is used in this Manual to designate an IBM card on which textual material is punched. Detailed information concerning TEXT CARDS is given on pp. 72-83.

Were it not for the keypunch conventions established by the scholar and the role of the TABLE CARDS as interpreters, four characters in the above line (P ¡ ´ !) would be impossible to obtain at printout, and one character (:) would require three separate punches on the TEXT CARD.

As indicated on p. 27, the scholar establishes his system of keypunch conventions by examining the text he wishes to print and by following directions given in Section C of the SPECIFICATIONS FORM. Without having read beyond this point, you will be able to complete all parts of Section C that pertain to keypunch conventions for TEXT CARDS.

Three exercises on this aspect of Section C will be found in the pages that follow. If you are primarily interested in Italian, do Exercise 1. If you are primarily interested in Spanish, do Exercise 2. If you are primarily interested in French, do Exercise 3.

After you finish the problem, chech your answers against those shown on pp. 107 ff. Then go on to p. 36 of the Manual. That is where you will begin to receive instructions on how to complete the TABLE CARD portion of Section C (i.e., Statement 7d).

Exercise 1: Italian

The following is an excerpt from the poetry of Giovanni Pascoli. Although it may not contain all the print-characters that appear in the total corpus, it does have enough characters to show how Section C of the SPECIFICATIONS FORM is to be used.

L'eremita

I

Pregava all'alba il pallido eremita:
"Dio, non negare il sale alla mia mensa,
non negare il dolore alla mia vita.

Ma del dolore che quaggiù dispensa
la tua celeste provvidenza buona,
a me risparmia il reo dolor che pensa.

O, s'è destino, per di più mi dona,
con quel che pensa, anche il dolor che grida:
l'afa che opprime, il nuvolo che tuona;

pensier che strugga e folgore che uccida!"

II

E ripregava a mezzodì: "Rimane,
Dio, che tu lasci che il nemico muto
pur mandi a me le nudità sue vane.

Quando al vespro del mio dì combattuto
dilegueranno, io penserò che, vere,
le avrei non meno dileguar veduto.

Nel cuore sono due vanità nere,
l'ombra del sogno e l'ombra della cosa;
ma questa è il buio a chi desìa vedere,

e quella il rezzo a chi stanco riposa."

III

A sera, disse: "Il servo, umile e grato,
ti benedice! Tu mi desti, o Dio,
l'aver provato e non aver peccato.

L'anima mia tu percotesti e il mio
corpo di tanto e tal dolor ch'è d'ogni
dolcezza assai più dolce ora l'oblìo.

Infelice cui l'occhio apresi ai sogni,
apresi nella grande ombra che tace,
sia che già tema, sia che sempre agogni!

Piansi, non piango: io dormirò: sia pace!"

IV

E velò gli occhi il pallido eremita.
Ed ecco gli fuìa per precordi
il dolce sonno della stanca vita;

quando riscosso (egli scendeva a fior di
grandi acque mute su labile nave)
gridò: "Signore, fa ch'io mi ricordi!

Dio, fa che sogni! Nulla è più soave,
Dio, che la fine del dolor; ma molto
duole obliarlo; ché gettare è grave

il fior che solo odora quando è colto."

Turn to Section C of the SPECIFICATIONS FORM, and, after examining the excerpt quoted above, make entries in Statements 2, 3a, 6a-h, and 7a-c.

Note: The reason why 3a and 4 are suggested for Italian texts will be explained on p.54 of this Manual.

Answers to this problem will be found on pp. 107 ff.

Exercise 2: Spanish

The following is an excerpt from Rubén Darío's Prosas profanas. Although it may not contain all the print-characters that appear in the total corpus, it does have enough characters to show how Section C of the SPECIFICATIONS FORM is to be used.

Margarita

¿Recuerdas que querías ser una Margarita
Gautier? Fijo en mi mente tu extraño rostro está,
cuando cenamos juntos, en la primera cita,
en una noche alegre que nunca volverá.

Tus labios escarlatas de púrpura maldita
sorbían el champaña del fino baccarat;
tus dedos deshojaban la blanca margarita:
"Sí..., no..., sí..., no...", ¡y sabías que te adoraba ya!

Después, ¡oh flor de Histeria!, llorabas y reías;
tus besos y tus lágrimas tuve en mi boca yo;
tus risas, tus fragancias, tus quejas eran mías.

Y en una tarde triste de los más dulces días,
la Muerte, la celosa, por ver si me querías,
¡como a una margarita de amor, te deshojó!

Turn to Section C of the SPECIFICATIONS FORM, and, after examining the excerpt quoted above, make entries in Statements 2, 3a, 4, 6a-h, and 7a-c.

Note: The reason why 3a and 4 are suggested for Spanish texts will be explained on p. 54 of this Manual.

Answers to this problem will be found on pp. 107 ff.

Exercise 3: French

The following excerpts are taken from Charles Baudelaire's Les fleurs du mal. Although they may not contain all the print-characters that appear in the total corpus, they do have enough characters to show how Section C of the SPECIFICATIONS FORM is to be used.

X. L'Ennemi

Ma jeunesse ne fut qu'un ténébreux orage,
Traversé çà et là par de brillants soleils;
Le tonnerre et la pluie ont fait un tel ravage,
Qu'il reste en mon jardin bien peu de fruits vermeils.

Voilà que j'ai touché l'automne des idées,
Et qu'il faut employer la pelle et les râteaux
Pour rassembler à neuf les terres inondées,
Où l'eau creuse des trous grands comme des tombeaux.

Et qui sait si les fleurs nouvelles que je rêve
Trouveront dans ce sol lavé comme une grève
Le mystique aliment qui ferait leur vigueur?

--O douleur! ô douleur! Le Temps mange la vie,
Et l'obscur Ennemi qui nous ronge le coeur
Du sang que nous perdons croît et se fortifie!

XLII. Que diras-tu ce soir...

Que diras-tu ce soir, pauvre âme solitaire,
Que diras-tu, mon coeur, coeur autrefois flétri,
A la très belle, à la très bonne, à la très chère,
Dont le regard divin t'a soudain refleuri?

--Nous mettrons notre orgueil à chanter ses louanges:
Rien ne vaut la douceur de son autorité;
Sa chair spirituelle a le parfum des Anges,
Et son oeil nous revêt d'un habit de clarté.

Que ce soit dans la nuit et dans la solitude,
Que ce soit dans la rue et dans la multitude,
Son fantôme dans l'air danse comme un flambeau.

Parfois il parle et dit: "Je suis belle, et j'ordonne
Que pour l'amour de moi vous n'aimiez que le Beau;
Je suis l'Ange gardien, la Muse et la Madone."

Turn to Section C of the SPECIFICATIONS FORM, and, after examining the excerpts quoted above, make entries in Statements 2, 3b, 5, 6a-h, and 7a-c.

Note: The reason why 3b and 5 are suggested for French texts will be explained on p. 56 of this Manual.

Answers to this problem will be found on pp. 107 ff.

B. Input-Output Conversion. In technical terms, a conversion system is needed because many of the characters on the Library chain have machine codes which differ from those of the keypunch symbols. In order to avoid complications for the uninitiated, a synthesis of code-disparities was made and unique class designations were assigned to characters requiring similar treatment. Once the user learns the class to which each print-character belongs, he will be able to formulate an efficient conversion system for his project.

C. Character Classes. Print-characters that are available on the Library chain fall into six classes. These are designated as "a," "b," "c," "d," "e," and "f."[1] As indicated below, some of the characters are present on the FORTRAN keyboard, others are not; some are printed exactly as punched, others are not; some require conversion, others do not.

	Character Classes					
	a	b	c	d	e	f
On keyboard	√	√				
Not on keyboard			√	√	√	√
Printed as punched	√					
Not printed as punched		√				
Conversion is necessary		√	√	√	√	√
Conversion is not necessary	√					

[1] Class designation is shown next to each character on Chart I, which is located on the inside back cover of this Manual.

In addition to the six classes of available characters, there is also a group of "potential" characters for which internal machine codes exist, but for which, at present, there are no input symbols on the FORTRAN keyboard and no printout characters that correspond to the codes. Since the internal codes would yield nothing if printing were attempted, they are disregarded in this Manual. Also disregarded is the record-mark (≠), which can only be generated internally by the computer.

Detailed information concerning input conventions that are appropriate for members of each class is given in the discussion which follows.

Class "a": This class is composed of twenty-six alphabetic characters, ten numerals, the comma, the hyphen, the period, and the solidus (/).[1] All of these characters appear on the FORTRAN keyboard and need no conversion.

As indicated earlier, the keypunching machine makes holes representing each character that has been struck. In addition, it interprets those holes in typewritten form along the top margin of the cards.

1) Alphabetic characters. From the example presented below, the reader will observe that, on TEXT CARDS, alphabetic characters appear in UPPER-CASE form only. This is due to the fact that there are no lower-case alphabetics on the keypunching machine's interpretation mechanism. In the final printout, however, the same characters will be reproduced in lower-case form.[2]

2) Other Class "a" characters. In contrast to the alphabetics, all other Class "a" characters are interpreted on TEXT CARDS in exactly the same form as they will be printed.

---

[1] Technically speaking, two other characters (* and +) belong to this class. In PRORA, however, they have been assigned special functions. For this reason, they cannot be used during keypunching in the same way as other Class "a" characters. A full discussion of asterisk and plus-sign functions is presented on pp. 62-65.

[2] See pp. 62-63 for capitalization of alphabetics at printout.

EXAMPLE

If the natural text reads:

virtus scire homini rectum, utile quod sit, honestum.

the punched TEXT CARD will show:

VIRTUS SCIRE HOMINI RECTUM, UTILE QUOD SIT, HONESTUM.

and the 1403 will print:

virtus scire homini rectum, utile quod sit, honestum.

Class "b": Five special signs belong to this class. They are:

=	(equal-sign)
- [spec.]	(special minus-sign)[1]
(	(open-parenthesis)
$	(dollar-sign)
)	(close-parenthesis)

Although these signs appear on the FORTRAN keyboard, they cannot be obtained in the same way as Class "a" characters, for, if the keys corresponding to them are struck, hole combinations are produced which cause the Library chain to print other characters:

If this key is struck	this will be printed
=	$
- [spec.][2]	@ (at-sign)
(	=
$	_ (underscore)
)	(

Despite this quirk of computer technology, two methods are available for printing Class "b" characters.

---

[1] On the FORTRAN keyboard (see Figure 7), the special minus-sign (marked as - [spec.] on Chart I) is located on the same key as the equal-sign. It should not be confused with the "hyphen" key.

[2] At the University of Toronto, the special minus-sign is used in conjunction with a TABLE CARD entry to produce a semicolon; and the equal-sign, which is on the same key, is used to produce a colon. The procedure for obtaining these results is described on pp. 44-49.

1) Multiple-stroke punching. Suppose that parentheses are standard characters in the text that is being transcribed. First, consult Chart I[1] for the CODE of the (. The CODE is 12 4 8. Every time an open-parenthesis appears in the text, punch 12 4 8 in that column of the TEXT CARD where the (is needed. In other words, depress the "multiple-punch" key, which stops the forward movement of the machine, and strike the "12" key, the "4" key, and the "8" key in succession. Then release the "multiple-punch" key. Thus, you will have entered all three components of the CODE in the same column. This hole combination will not have to be converted, for, in essence, a Class "a" situation has been created by the multiple-punch.

Next, consult Chart I for the CODE of the) . The CODE is 12 5 8. Every time a close-parenthesis appears in the text, punch 12 5 8 in that column of the TEXT CARD where the character is needed.

EXAMPLE

If the text reads:

(in alium maturescimus partum, alia origo nos exspectat)

the TEXT CARDS will be punched as:

```
12                                                    12
4IN ALIUM MATURESCIMUS PARTUM, ALIA ORIGO NOS EXSPECTAT5
8                                                     8
```

---

[1] Chart I is affixed to the inside back cover of this Manual. It is mentioned in this discussion primarily to acquaint you with the system from which instructions on the SPECIFICATIONS FORM have been abstracted. However, when you fill out Section C of the SPECIFICATIONS FORM, you will be able to bypass Chart I, since the CODE of each Class "b" character (except the special minus, which has no CODE) is shown beneath it on the CHARACTER SELECTION FORM.

and the 1403 will print:

(in alium maturescimus partum, alia origo nos exspectat)[1]

2) Single-stroke punching. If the multiple-stroke system is considered undesirable for punching Class "b" characters on TEXT CARDS, single-stroke punching may be used instead. By means of this system, the "(" and ")" keys may be struck when the text is transcribed, and open- and close-parentheses will be printed by the Library chain.

In order to achieve the desired result, however, it is necessary to use TABLE CARD entries to translate the input (i.e., keypunch) codes into printout codes that correspond to the open- and close-parentheses on the Library chain. The procedure is as follows:

a) Consult Chart I and find the ISN (Input Symbol Number) of the open-parenthesis. The ISN is 29. Enter this figure in Row (3) of the TABLE CARD FORM.[2] (See p. 43)

b) Consult Chart I again and find the CODE of the open-parenthesis. The CODE is 12 4 8. Enter this figure in Row (4) of the TABLE CARD FORM.[3]

---

[1] Unlike the other members of Class "b," the special minus-sign (- [spec.]) has no usable CODE for multiple-stroke punching. If a minus-sign is required in the printout, it may be obtained by striking the "hyphen" key, which is a Class "a" input device on the FORTRAN keyboard.

[2] You will be able to omit this step when you fill out Section C of the SPECIFICATIONS FORM, because the ISN of each Class "b" character has been pre-entered for you in Row (3) of the GUIDE TO KEYPUNCHING. Chart I is mentioned in this discussion primarily to acquaint you with the system from which instructions on the SPECIFICATIONS FORM have been abstracted.

[3] You will be able to bypass Chart I when you fill out Section C of the SPECIFICATIONS FORM, because the CODE of each Class "b" character (except the special minus, which has no CODE) is shown beneath it on the CHARACTER SELECTION FORM. Chart I is mentioned in this discussion primarily to acquaint you with the system from which instructions on the SPECIFICATIONS FORM have been abstracted.

Go through the same steps for the close-parenthesis. Answers to this exercise will be found on pp. 107 ff.

Let us now review the single-stroke method of punching Class "b" characters:

When TEXT CARDS are prepared, the "(" and ")" keys may be struck every time an open- or close-parenthesis occurs in the source document.

When TABLE CARDS are prepared, 12 4 8 will be multiple-punched in column 29 of TABLE CARD 1, and 12 5 8 will be multiple-punched in column 61 of TABLE CARD 1. These columns will screen every "(" and ")" hole combination found on the TEXT CARDS, and will convert each one into its correct printout form. Thus, the CODES of the open- and close-parentheses will have to be multiple-punched only once during the entire project.

EXAMPLE

If the text reads:

(in alium maturescimus partum, alia origo nos exspectat)

the TEXT CARD for this line will be punched as:

(IN ALIUM MATURESCIMUS PARTUM, ALIA ORIGO NOS EXSPECTAT)

and the TABLE CARD entries will cause the 1403 to print:

(in alium maturescimus partum, alia origo nos exspectat)

The following illustration shows why it is necessary to use TABLE CARD conversion with Class "b" characters that are punched by the single-stroke method: If a conversion system had not been used for the open- and

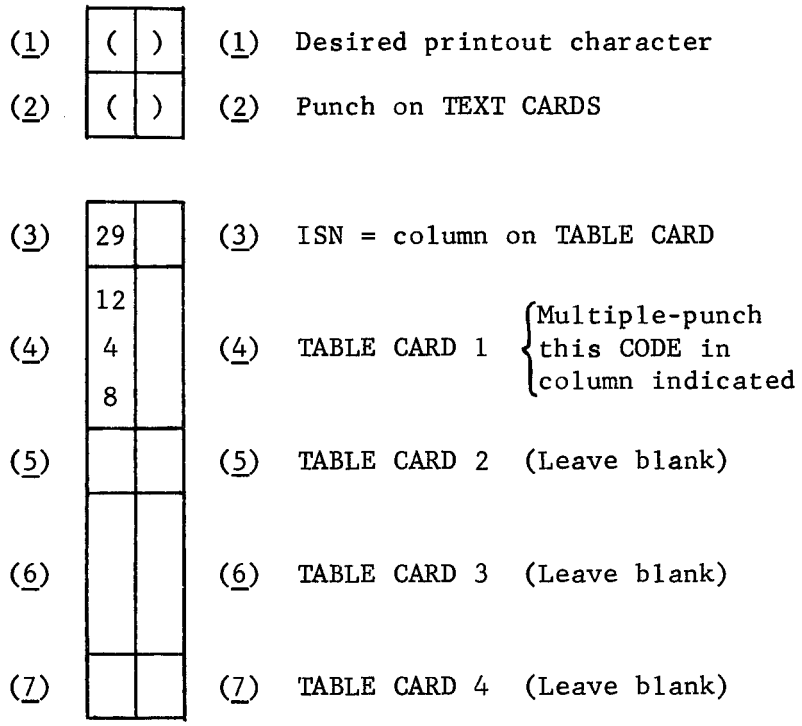
close-parentheses, the keypunch entries shown in the TEXT CARD sample above would have yielded

=in alium maturescimus partum, alia origo nos exspectat(

rather than the desired printout.

Figure 10

Sample Entry on TABLE CARD FORM



Class "c": The characters which belong to Class "c" are:

:	(colon)
;	(semicolon)
'	(apostrophe)
?	(question mark)
>	(greater than)
<	(smaller than)
#	(number)
%	(percent)
[	(left bracket)
]	(right bracket)

These characters are not found on the FORTRAN keyboard. Since no input keys are available for punching them, it is necessary to use a special punching technique in order to obtain them at printout.

Suppose that the colon (:) appears in the natural text and that, according to the requirements of the project, this mark must also appear in the printout. Despite the fact that there is no "colon" key on the input machine, colons can be printed by the 1403. Two methods are available for producing the desired result.

1) Multiple-stroke punching. Consult Chart I and find the CODE that corresponds to the colon.[1] The CODE is 11 5 8. Every time a colon appears in the text you are transcribing, punch 11 5 8 in that column of the TEXT CARD where the colon is needed. In other words, depress the

---

[1] When you complete Section C of the SPECIFICATIONS FORM, you will notice that all Class "c" characters are shown with their CODE on the CHARACTER SELECTION FORM. Thus, it will be possible to bypass Chart I and work directly from the CHARACTER SELECTION FORM. Chart I is mentioned in this discussion primarily to acquaint you with the system from which instructions on the SPECIFICATIONS FORM have been abstracted.

"multiple-punch" key and strike the "11" key, the "5" key, and the "8" key in succession. Then release the "multiple-punch" key. Thus, you will have entered all three components of the colon-CODE in the same column of the TEXT CARD. This input CODE will not have to be converted as the cards are processed, for, in essence, a Class "a" situation has been created by the multiple-punch.

EXAMPLE

If the natural text reads:

bajo las formas de armonioso canto:

the TEXT CARD will be punched as:

```
                                                    11
BAJO LAS FORMAS DE ARMONIOSO CANTO5
                                                    8
```

and the 1403 will print:

bajo las formas de armonioso canto:

2) Single-stroke punching. When single-stroke punching is used to effect the printing of Class "c" characters, TEXT CARD entries corresponding to those characters must be converted. This is done by making notations on the appropriate TABLE CARD. The procedure is as follows:

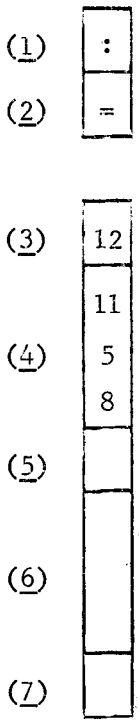
Consult Chart I and, from among the characters marked with a √ ,[1] select one that will not have to appear in the printout. Suppose the

---

[1] Characters marked in this way on Chart I correspond to those shown in Row (2) of the GUIDE TO KEYPUNCHING. The √ means that they may be used as keypunch substitutes for characters that do not appear on the FORTRAN keyboard.

Figure 11

Sample Entry on TABLE CARD FORM



(1) Desired character

(2) Punch substitute on TEXT CARDS

(3) ISN = column on TABLE CARDS

(4) TABLE CARD 1 — Multiple-punch this CODE in column 12

(5) TABLE CARD 2 (Leave blank)

(6) TABLE CARD 3 (Leave blank)

(7) TABLE CARD 4 (Leave blank)

equal-sign (=) will not be needed for your project. This sign may therefore act as a substitute for the colon during the keypunching phase.[1] Once this decision has been reached, fill out the TABLE CARD FORM:

(1) In this row, enter the desired printout character (i.e., :).

(2) In this row, enter the substitute symbol (=).

(3) In this row, enter the ISN of the substitute.

Chart I shows that the ISN of the equal-sign is 12. This number tells the user that, when TABLE CARDS are prepared, references to conversion of the equal-sign will be entered in column 12 of the appropriate TABLE CARD.

(4) In this row, enter the CODE of the desired printout character.

According to Chart I, the CODE for colons is 11 5 8. When TABLE CARDS are prepared, the colon-CODE will be multiple-punched in column 12 of TABLE CARD 1. This instructs the machine that every equal-sign found on TEXT CARDS is to be printed as a colon.

(5) Leave all other rows blank.

---

[1] In the first sentence of this paragraph, it was said that you should choose as a substitute character one that does not have to appear in the final printout. This statement was made in order to avoid complications at what is still a very early stage in our explanation of the conversion system. In point of fact, however, all characters marked with a √ on Chart I (except those belonging to Class "b") may be assigned a dual role. On the one hand, they may be used during the keypunching phase as substitutes for print-characters that do not appear on the FORTRAN keyboard. On the other, they may be punched on TEXT CARDS and be printed exactly as punched. This feature of PRORA considerably extends the printout capabilities of the system. (See pp. 64-65 for a discussion of the Suspend Conversion feature.)

EXAMPLE

The following is an example of the conversion process for the case described above. If the natural text reads:

bajo las formas de armonioso canto:

the TEXT CARD for this line will be punched as:

BAJO LAS FORMAS DE ARMONIOSO CANTO=

and the TABLE CARD entry will cause the 1403 to print:

bajo las formas de armonioso canto:

Single-stroke punching of Class "c" characters

Exercise on completing the TABLE CARD FORM

Sample entries have been made in steps of increasing difficulty on the TABLE CARD FORM which is presented below. In order to accustom yourself to the way in which a conversion system for Class "c" characters is formulated, proceed from step to step.

In step 1, all entries have been made for you according to the procedure explained on p. 47.
In step 2, the desired printout character, a keypunch substitute, and the ISN of the substitute have been entered.
In step 3, the desired printout character and a suitable keypunch substitute have been entered.
In step 4, only the desired printout character has been entered.

Note. Do not confuse the Step numbers (shown at the top) with the Row numbers (shown at the side). The type of information that should be inserted in each row is indicated to the right of the row.

	Step 1		Step 2			Step 3			Step 4	
(1)	:	;	'	?	>	<	#	%	[	]
(2)	=	[spec.] -	/	$	9	0	6	8		
(3)	12	13	18	44	10					
(4)	11 5 8	11 6 8								
(5)										
(6)										
(7)										

(1) Desired printout character
(2) Keypunch substitute
(3) ISN = column on TABLE CARD
(4) TABLE CARD 1 {Multiple-punch this CODE in column indicated
(5) TABLE CARD 2 (Leave blank)
(6) TABLE CARD 3 (Leave blank)
(7) TABLE CARD 4 (Leave blank)

Answers on pp. 107 ff.

Class "d": To this class belong all diacritic marks that are available on the Library chain (` ´ ^ ¨ • ~ ¸ ˇ). These marks are all upper-case. They are used in combination with lower-case letters and are printed in the same print-position as the letter that they modify (e.g., á, ü, ñ[1]). For convenient reference, the alphabetic character is designated as the primary symbol and the diacritic is designated as the secondary symbol.

Two methods have been devised for causing diacritics to be printed in combination with alphabetic characters. Both require the use of Chart I, the TABLE CARD FORM, and the SUMMARY OF WORDMARK (W) CODES that goes with TABLE CARD 4.

1) Single-symbol punching. As in the natural text that is being copied, only one space is allotted on TEXT CARDS for each letter-plus-diacritic combination. This space is filled by a substitute symbol: i.e., a character that has a check (√) beside it on Chart I and that has been arbitrarily chosen to represent a letter and its diacritic mark during the keypunching phase of the project.[2] For example, a number may be utilized as a keypunch substitute for a particular combination.[3]

---

[1] It will be noted that the upper-case Ñ is a single character on the Library chain, and that it belongs to Class "e" (see Chart I on inside back cover).

[2] As stated earlier, the √ indicates 1) that the character is available as an input symbol on the FORTRAN keyboard, and 2) that it may be used as a substitute for a character or combination of characters not available on the keyboard.

[3] The fact that numbers qua numbers may also be needed in the final printout does not prevent their use as substitute symbols during the keypunching phase. This is explained in the section entitled "Suspend Conversion" (pp. 64-65).

The following convention, established at the University of Toronto for the punching of Spanish poetry texts, illustrates how the system works:

Table of Equivalences	Numeric Keys as Substitutes[1]
ú - 1	
í - 2	1-ú 2-í 3-ó
ó - 3	4-á 5-é 6-ñ
á - 4	7-ü 8-ï
é - 5	
ñ - 6	
ü - 7	
ï - 8	

According to this convention, a verse such as:

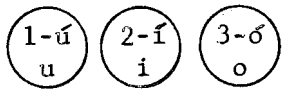
la muerte arrebató con saña impía

would be punched as:

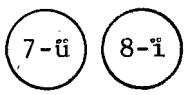
LA MUERTE ARREBAT3 CON SA6A IMP2A

---

[1] The rationale behind the design of this system is as follows: The numbers 1, 2, 3 occupy the same keys as the vowels u, i, o. Like all numbers on the FORTRAN keyboard, 1, 2, 3 are obtained by depressing the "Numeric Shift" key (which may be compared to the "Upper-Case Shift" key on standard typewriters), and then striking the proper "alphanumeric" key. If 1, 2, 3 are also used as substitutes for ú, í, ó, the keypunch operator will not have to learn new finger positions for these accented vowels:



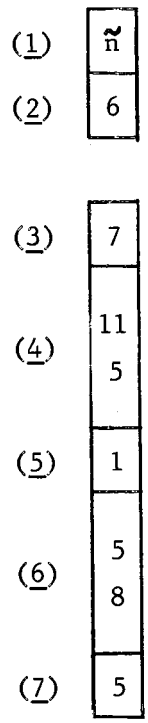
Furthermore, since ü and ï are assigned to the "7" and "8" keys, the operator can use the same finger (though not the same position) for ü as for u-ú, and the same finger for ï as for i-í.



Finally, since ü and ï occur rarely in Spanish literary texts, the keypunch operator will find it necessary to learn substitute keys for only three letter-plus-diacritic combinations that occur with high frequency:

Figure 12

Sample Entry on TABLE CARD FORM



(1) Desired combination

(2) Punch substitute on TEXT CARDS

(3) ISN = column on TABLE CARDS

(4) Punch on TABLE CARD 1

(5) Punch on TABLE CARD 2

(6) Punch on TABLE CARD 3

(7) Punch on TABLE CARD 4

The conversion scheme necessary for transforming the substitute input symbols into the proper printout characters would include the following information:

Input Symbol	Printout Character	Special Notes
1	ú	Printout Character is composed of a primary and a secondary symbol. The primary symbol and the secondary symbol are to be printed in the same print-position. The primary symbol will be lower-case. The secondary symbol will be upper-case.
2	í	
3	ó	
4	á	
5	é	
6	ñ	
7	ü	
8	ï	

Once these points have been established, the user fills out the TABLE CARD FORM. This form shows, in summary fashion, what decisions have been reached concerning the way in which each letter-plus-diacritic combination is to be obtained. The procedure is as follows:

(1) What alphabetic + diacritic combination is desired? Assume that you want ñ . Enter this information in the first row. (See Sample Entry, p. 52.)

(2) What symbol will substitute for that combination on the TEXT CARDS? Choose a substitute from among the unused check-marked [√] symbols on Chart I. Suppose that you want the substitute for ñ to be the number 6 . Enter this information in the second row.

(3) What is the ISN of the substitute? Consult Chart I. The ISN of 6 is 7 . Enter this information in the third row.

(4) What is the CODE of the alphabetic character that is shown in row (1)? Consult Chart I. The CODE of n is $\frac{11}{5}$.

Enter this information in the fourth row.

(5) Is the alphabetic character to be printed? 1, if "Yes"; 0, if "No." Yes, it is to be printed as a lower-case letter. Enter a 1 in the fifth row.

(6) What is the CODE of the diacritic mark that is shown in row (1)? Consult Chart I. The CODE is $\begin{matrix} W \\ 5 \\ 8 \end{matrix}$. Enter only the numeric portion of the CODE in the sixth row. The W or WORDMARK portion of the CODE indicates that the diacritic mark, which is a secondary symbol, is an upper-case character on the Library chain. This detail is pertinent to the entry that follows.

(7) Is the diacritic mark to be printed? Yes; it is to be printed as an upper-case character. Consult the SUMMARY OF WORDMARK CODES. The proper CODE for a secondary symbol that is to be printed in upper-case is 5 . Enter this information in the seventh row.

The "single-symbol" punching method is particularly valuable for the transcription of texts written in languages such as Italian and Spanish, since those languages have relatively few letter-plus-diacritic combinations. The advantage of the method may be summarized as follows: it helps to accelerate the preparation of input material; it tends to minimize keypunching errors; and, since it reduces the number of extra symbols that must be punched onto TEXT CARDS, it helps the keypunch operator to calculate the exact length of each line that will be printed by the 1403. This latter feature is especially significant when prose is transcribed, since esthetic considerations require the closest possible right-justification of the printed text.[1]

---

[1] See below, pp. 81-83.

Single-symbol punching of letter-plus-diacritic

Exercise on completing the TABLE CARD FORM

Using the TABLE CARD FORM presented below, answer these questions:

(1) What alphabetic + diacritic combination is desired? (Entries have been made for you in accordance with the convention discussed above.)

(2) What symbol will substitute for that combination? Choose a substitute from the unused check-marked [√] symbols on Chart I. (Entries have been made for you in accordance with the convention discussed above.)

(3) What is the ISN of the substitute? See Chart I.

(4) What is the CODE of the alphabetic character? See Chart I.

(5) Is the alphabetic character to be printed? 1, if "Yes"; 0, if "No."

(6) What is the CODE of the diacritic mark? See Chart I. Enter only the numeric portion of the CODE.

(7) Is the diacritic mark to be printed? See SUMMARY OF WORDMARK (W) CODES; then enter the proper CODE in the seventh row.

Answers to this exercise will be found on pp. 107 ff.

(1)	ú	í	ó	á	é	ñ	ü	¡	(1) Desired combination
(2)	1	2	3	4	5	6	7	8	(2) Punch substitute on TEXT CARDS

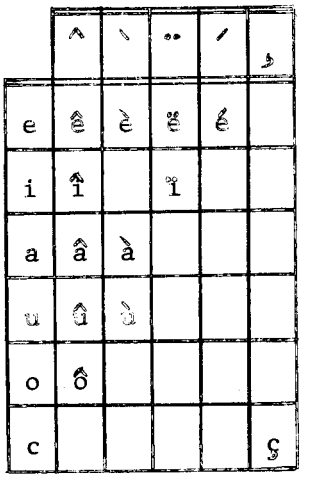
(3)						7			(3) ISN = column on TABLE CARDS
(4)						11 5			(4) Punch on TABLE CARD 1
(5)						1			(5) Punch on TABLE CARD 2
(6)						5 8			(6) Punch on TABLE CARD 3
(7)						5			(7) Punch on TABLE CARD 4

SAMPLE ENTRY

2) Double-symbol punching. A character that has a check (/) beside it on Chart I is arbitrarily chosen to represent the diacritic mark only. The key corresponding to that symbol is struck before the letter with which the diacritic is supposed to combine. Thus, two spaces are allotted for the combination: the first, for the diacritic substitute; the second, for the letter itself.

This method should be used in cases where the number of special input symbols exceeds the number that is available on the FORTRAN keyboard, or in cases where confusion might arise if the single-symbol method were employed.

Let us suppose that the diagram presented below represents all the letter-plus-diacritic combinations that are required in a given French text:



The following information may be extracted from this diagram:

a) Total no. of combinations....12

b) Total no. of alphabetics..... 6

c) Total no. of diacritics..... 5

It seems apparent that, even if there were enough special symbols available to act as substitutes for the 12 letter-plus-diacritic combinations, the keypunch operator's speed and accuracy would be reduced considerably because of the effort needed to remember the correct substitute-symbol for each combination. Obviously, it would be much easier and much more efficient if the operator were able to punch the text in the same way as she might type it on a typewriter equipped with special keys for the 5 diacritic marks: in other words, if she were able to strike a "diacritic" key and then strike a "letter" key. A system of this kind can, in fact, be set up in a rather simple way. The procedure is as follows:

a) Find 5 characters that are marked with a check (√) on Chart I: for example, the numbers 1, 2, 3, 4, and 5. Let these characters stand for the required diacritic marks.

b) Make out a table of input equivalences, and give this to the keypunch operator so that she may learn where the "diacritic" keys are located on the keyboard. This information may be arranged in the following manner:

Table of Equivalences	Numeric Keys as Substitutes
^ - 1	1-^ 2-` 3-¨
` - 2	
¨ - 3	4-´ 5-¸
´ - 4	
¸ - 5	

c) After learning the position of the "diacritic" keys, the operator goes on to punch the input material. For instance, a line of text such as:

la loi, conçue là dans le même esprit, réduisit

would be keypunched as:

LA LOI, CON5CUE L2A DANS LE M1EME ESPRIT, R4EDUISIT

The conversion scheme necessary for transforming the substitute input symbols into the proper printout characters would include the following information:

Input Symbol	Printout Character	Special Notes
1	^	Printout Character is a secondary symbol.
2	`	Printout Character is to be printed as upper-case.
3	¨	Printout Character is to be printed in the same position as the primary symbol it modifies.
4	´	The space formerly occupied by the special input symbol must be eliminated during the printout.
5	¸	

Once these points have been established, the user fills out the TABLE CARD FORM. This form shows, in summary fashion, what decisions have been reached concerning the way in which each letter-plus-diacritic combination is to be obtained.

Double-symbol punching of letter-plus-diacritic

Exercise on completing the TABLE CARD FORM

Using the TABLE CARD FORM presented below, answer these questions:

(1) What diacritic mark is desired? (Entries have been made for you in accordance with the convention discussed above.)

(2) What symbol will substitute for the diacritic mark? Choose a substitute from the unused check-marked [√] symbols on Chart I. (Entries have been made for you in accordance with the convention discussed above.)

(3) What is the ISN of the substitute? See Chart I.

(4) Leave blank. (This sets the stage for contraction of the text at printout.)

(5) Punch a 0 (zero). (This contracts the text: i.e., the next alphabetic character to appear will be drawn into the same print-position as the diacritic mark.)

(6) What is the CODE of the diacritic mark? See Chart I. Enter only the numeric portion of the CODE.

(7) Is the diacritic mark to be printed? See SUMMARY OF WORDMARK (W) CODES; then enter the proper CODE in the seventh row.

Answers to this exercise will be found on pp. 107 ff.

(1)	^	ˋ	¨	´	¸	(1) Desired character
(2)	1	2	3	4	5	(2) Punch substitute on TEXT CARDS
(3)	2					(3) ISN = column on TABLE CARDS
(4)						(4) Blank on TABLE CARD 1
(5)	0					(5) Punch on TABLE CARD 2
(6)	3					(6) Punch on TABLE CARD 3
(7)	5					(7) Punch on TABLE CARD 4

SAMPLE ENTRY

Class "e": The following characters belong to this class:

" (double quotes)
¿ (inverted question mark)
¡ (inverted exclamation point)
Ñ (capital N with tilde)
♭ (musical flat)
ℓ (leaves)
ξ (Greek letter "xi")

Like the diacritics of Class "d," all of these characters are secondary symbols and are printed in upper-case only. They differ from the diacritics, however, in that they do not combine with any other character, but take up an entire print-position by themselves. In order to obtain them on the Library chain: select the character you desire; choose a substitute for it from among the unused check-marked (√) symbols on Chart I; and follow the remaining directions on the TABLE CARD FORM.

Class "e" Characters

Exercise on Completing the TABLE CARD FORM

Using the TABLE CARD FORM presented below, answer these questions:

(1) What printout character is desired?

(2) What symbol will substitute for it? Choose a substitute from the unused check-marked [√] symbols on Chart I.

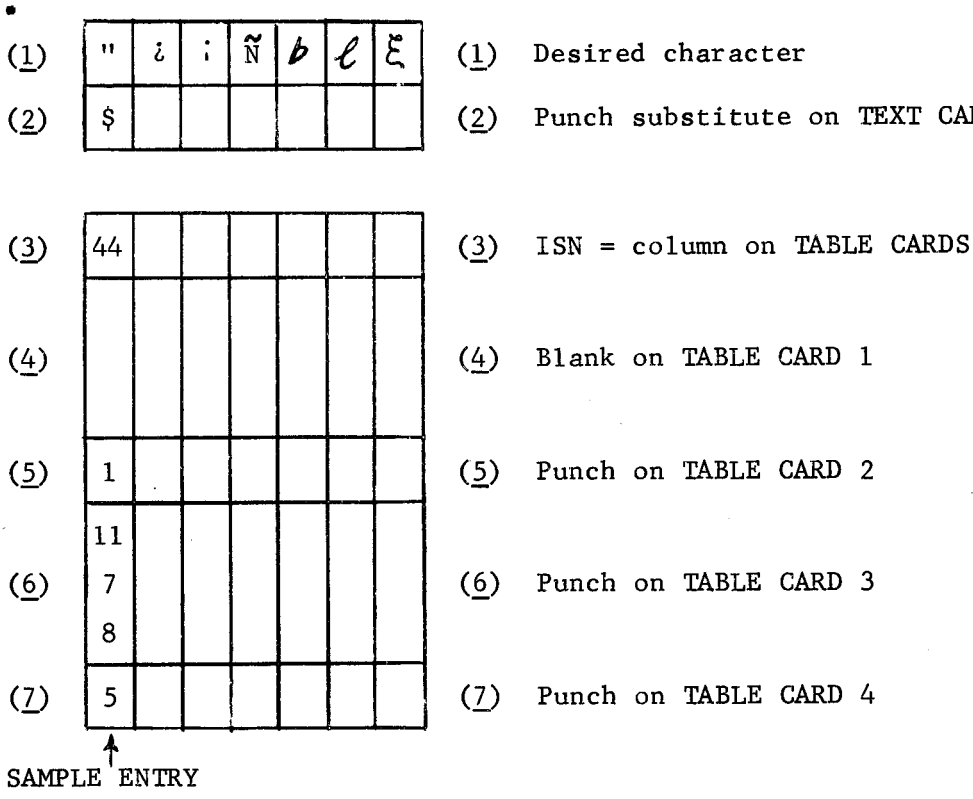
(3) What is the ISN of the substitute? See Chart I.

(4) Leave this row blank. (The primary symbol is a blank.)

(5) Entry has been made for you. (The 1 means that a blank will be printed when the lower-case section of the chain is activated; i.e., a space will be left for the secondary symbol that is noted in Row (6).)

(6) What is the CODE of the desired character? See Chart I. Enter only the numeric portion of the CODE.

(7) Entry has been made for you. (The 5 means that the upper-case section of the chain will be activated.)



Class "f": All capital letters belong to this class. It has already been shown that the Library chain normally prints alphabetic input symbols as lower-case characters.[1] When capital letters are necessary, a special "shift character" must be keypunched before the letter that is to be capitalized at printout. In PRORA, the shift character chosen for this purpose is the asterisk (*).

EXAMPLE

If the text reads:

we have the Pure Intellect, Taste, and the Moral Sense.

the TEXT CARD is punched as:

WE HAVE THE *PURE *INTELLECT, *TASTE, AND THE *MORAL *SENSE.

and the 1403 will print:

we have the Pure Intellect, Taste, and the Moral Sense.

Use of a shift character for capitalization resembles use of a keypunch substitute to represent a diacritic mark (i.e., the double-symbol punching method[2]):

1) When TEXT CARDS are prepared, the shift character, like the diacritic substitute, is punched before the letter it is to modify.

---

[1] See p. 37.

[2] See above, pp. 56-59.

2) Later, during the printout phase, the space formerly occupied by the shift character, like that occupied by the diacritic substitute, is suppressed and the text is contracted to eliminate the gap.

Nevertheless, a basic difference must be noted:

1) Diacritic substitute. The keypunch substitute itself is ultimately converted into another character (the diacritic mark) and this, in turn, is printed.

2) Shift character. The shift character is never printed in any form. Rather, it causes the following letter to be converted from lower-case to upper-case.

D. Suspend Conversion. The example given on p. 62 poses the following problem: If the "asterisk" key is used for capitalization, how can a printed asterisk be obtained? This problem is resolved through the use of another shift character, the plus-sign (+).

Whenever a plus-sign precedes data which, by TABLE CARD convention, should be converted, all conversion will be suspended until a second plus-sign is encountered.

Thus, in the example given below:

1. The asterisk can function as a "capital" shift; or, because of the "suspend conversion" shift, can be printed as an asterisk where the context demands.
2. Numerals can function as keypunch substitutes for other characters; or, because of the "suspend conversion" shift, can be printed as numerals wherever necessary.

EXAMPLE

If the text reads:

El veintitrés de mayo de 1860, el señor Q***, encontrándose

the TEXT CARD is punched as:

*EL VEINTITR5S DE MAYO DE +1860+, EL SE6OR *Q+***+, ENCONTR4NDOSE

and the 1403 will print:

El veintitrés de mayo de 1860, el señor Q***, encontrándose

Note. The "suspend conversion" function of the "+" key is built into

PRORA as an automatic feature. For this reason, a plus-sign can never be obtained at printout. However, this is a small price to pay for the great flexibility that the "suspend conversion" feature makes possible.

E. Additional Uses of Table Cards. The previous description of the conversion system has by no means been exhaustive. After gaining experience, users will realize that the system makes additional variations possible. Two examples illustrate this fact:

1. Obtaining exclamation points. A glance at Chart I will show that the exclamation point is not one of the standard output characters on the Library chain. This punctuation mark can be obtained, however, by combining two lower-case characters at printout: the apostrophe (') and the period (.). With the exception of step (7), the procedure is the same as that used in the "Single-symbol punching" of letter-plus-diacritic combinations.[1]

(1) What combination is desired? Apostrophe + period.

(2) What symbol will substitute for this combination? Choose a substitute from the unused check-marked [√] symbols on Chart I. Suppose we select /.

(3) What is the ISN of the substitute? See Chart I. The ISN of / is 18.

(4) What is the CODE of the period? See Chart I. The CODE is $\begin{matrix}12\\3\\8\end{matrix}$. (Note: By making this entry on TABLE CARD 1, we automatically treat the period as a primary symbol.)

(5) Is the period to be printed? 1 if "Yes"; 0 if "No." Yes, it is to be printed.

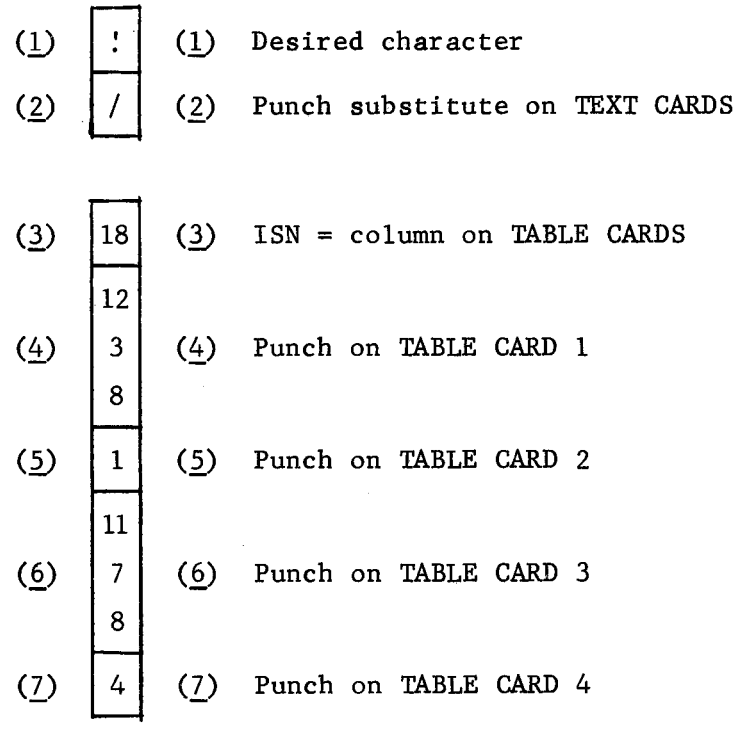
(6) What is the CODE of the apostrophe? See Chart I.

---

[1] See above, pp. 50-55.

Figure 13

Sample Entry on TABLE CARD FORM



The CODE is $\frac{11}{7}$ $\frac{}{8}$. (Note: By making this entry on TABLE CARD 3, we automatically treat the apostrophe as a secondary symbol.)

(7) Is the apostrophe to be printed? See SUMMARY OF WORD-MARK (W) CODES. Yes, it is to be printed. The correct entry for a secondary symbol with "No W" is 4.

2. Word-tags. One of the basic principles guiding the development of PRORA I is that post-editing is more efficient than pre-editing. On occasion, however, it may be deemed advisable to insert a limited number of editorial notations when the TEXT CARDS are prepared. Word-tags are used for this purpose.

Suppose, for example, that the user considers it advantageous to tag all rhyme words in a poetry text during the keypunching phase of his project. Without placing an undue burden on himself or on the keypunch operator, he can establish a convention such as the following:

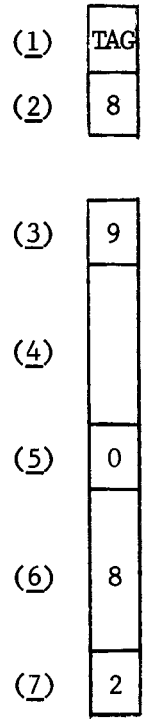
THE TAGGING OF RHYME-WORDS

a. All rhyme-words in the natural text will be underlined in red.
b. After keypunching an underlined word, the operator will punch the rhyme-tag.
c. The arbitrarily chosen rhyme-tag for this project will be the figure 8.
d. The TABLE CARD FORM will show that:
    1) the rhyme-tag will be treated as a secondary symbol on the tape-record;
    2) the rhyme-tag will not be printed, but will be stored for future use.

Once the convention is established, the proper entries are made on the TABLE CARD FORM.

Figure 14

Sample Entry on TABLE CARD FORM



(1) Desired result

(2) Punch on TEXT CARDS

(3) ISN = column on TABLE CARDS

(4) Blank on TABLE CARD 1 (No primary symbol.)

(5) Punch on TABLE CARD 2 {0 = "Do not print"; i.e., contract the text.

(6) Punch on TABLE CARD 3 (Secondary symbol.)

(7) Punch on TABLE CARD 4 {2 = "Do not print secondary symbol."

F. Capabilities of the Code-Conversion System. According to the wishes of the user, any of the following actions can take place when PRORA I makes a tape-record from the TEXT CARDS:

1. An input symbol is moved unchanged from TEXT CARD to tape-record (e.g., all Class "a" situations).
2. An input symbol is replaced by a table-entry which is then moved to the tape-record (e.g., an equal-sign punched on a TEXT CARD is converted to a colon, and the colon is recorded on tape).
3. An input symbol produces two symbols on the tape-record (a primary symbol and a secondary symbol) which will be superimposed during the printing operation (e.g., a single-symbol punch becomes a letter-plus-diacritic combination at printout).
4. An input symbol (e.g., a diacritic substitute in a double-symbol punching situation) becomes a secondary symbol on the tape-record, the text is contracted, and the secondary symbol combines with the next sequential primary symbol during the printing phase.
5. An input symbol is suppressed, and the space which it occupied on the TEXT CARD is eliminated at printout (e.g., capitalization and word-tags).

G. Functions of the TABLE CARDS. The input data deck must contain four TABLE CARDS. Each of these cards has information which influences the final printout:

Card 1 gives the correspondence between an input symbol and a

primary symbol on the tape-record.

Card 2 contains a 1 in those columns where the primary symbol is to be retained during printout, and a 0 (zero) in those columns from which the primary symbol is to be suppressed during printout.

Card 3 gives the correspondence between an input symbol and a secondary symbol on the tape-record.

Card 4 contains WORDMARK (W) CODES that influence the manner in which primary and secondary symbols are to be processed. Five codes are available:

"1" indicates that a wordmark is to be added to a primary symbol so that an UPPER-CASE character may be printed.

"2" indicates that no wordmark is to be added to a secondary symbol and that the symbol is not to be printed.

"3" indicates that a wordmark is to be added to a secondary symbol and that the symbol is not to be printed.

"4" indicates that no wordmark is to be added to a secondary symbol and that the symbol is to be printed as a lower-case character.

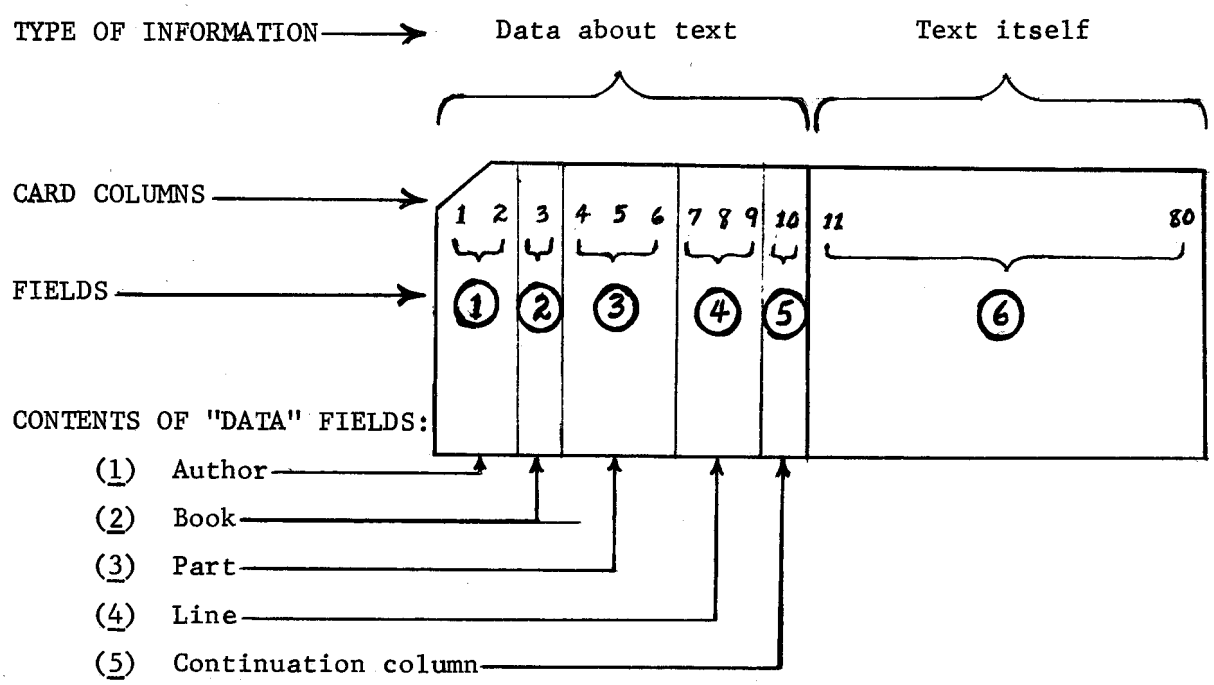
"5" indicates that a wordmark is to be added to a secondary symbol and that the symbol is to be printed as an UPPER-CASE character.

For the convenience of the user, a SUMMARY OF WORDMARK (W) CODES is presented on Chart I. This summary should be consulted before Row (7) of the TABLE CARD FORM is filled in.

IV. TEXT CARDS

As indicated in Figure 15, TEXT CARDS contain two basic types of information: data about the text (Fields 1-5) and the text itself (Field 6).

Figure 15



A. Data about the text. Suppose that the material to be printed is the poetry of Julián del Casal (Cuba, 1863-1893). The works in question were originally published in three volumes: Hojas al viento (1890), Nieve (1892), and Bustos y rimas (1893). The last of these volumes contains prose (Bustos) as well as poetry (Rimas). Since the edition that is being prepared deals exclusively with poetry, Rimas will be keypunched now and Bustos will be handled at a later date. A group of Poesías sueltas has also been collected. These poems are to be included in a separate section of the new edition.

It has been decided that the poems found in Hojas al viento, Nieve, and Rimas will be numbered consecutively according to their order of appearance in the original editions. The Poesías sueltas, however, will be numbered according to their sequential position in the table of contents of the new edition.

Each poem is composed of a title and a finite number of lines. Some poems also have a subtitle and/or dedication. In order to facilitate future linguistic analysis of the corpus, unique codes will now be assigned to each component of the poems. The codes will be "T" for title, "S" for subtitle, "D" for dedication; and lines of verse will be numbered consecutively within each poem.

All of the information given above will be recorded in the "data section" of the TEXT CARDS; all entries will be right-justified in each data field; and zeros will be inserted in the left-hand portion of the data fields whenever gaps occur, since no blank spaces are allowed in the data section of TEXT CARDS.

1. Author. Columns 1-2 have been reserved for identification of the author. Because the space allotted for this purpose is so restricted, an "author code" must be devised. Numerals, alphabetics, or a combination of both types of characters are permissible in this field. But, whatever the choice, no space may be left blank.

The name of the author is Julián del Casal. Casal's works may be treated as part of a series on Latin American authors, or they may be treated as a separate, terminal project. Depending on the plans of the scholar, any of the following codes would be legitimate for Field 1:

Numeric codes

01 - (zero 1) if the works of Casal are treated as a separate, terminal project; or

07 - (zero 7) if the works of Casal are part of a series.

Alphabetic codes

0C - (zero C)[1] if the initial of the surname is unique; or

JC - if the initial of the surname is not unique.

Combination codes

1C - (one C) if the code is to begin with a number; or

C1 - (C one) if the code is to begin with a letter.

2. Book. Column 3 of every TEXT CARD is reserved for a "book code." Any single-position numeric or alphabetic code may be used in this field.

As indicated above, the new edition of Casal's poetry will be divided into four sections: Hojas al viento, Nieve, Rimas, and Poesías sueltas. If numerals are desired as "book codes," then 1, 2, 3, and 4 could be used to designate the respective sections. If an alphabetic code is preferred, then H, N, R, and P (the first letter in each section title) would be legitimate designations.

3. Part. Columns 4, 5, and 6 refer to subdivisions of the material indicated in the previous field. Since the project under discussion

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[1] In these codes, alphabetics are represented by upper-case characters because the "interpreting" mechanism of the keypunch machine transcribes them in this manner at the top of all TEXT CARDS.

deals with the poetry of Julián del Casal, Field 3 will contain "poem codes." Like all other entries in the data area of TEXT CARDS, these codes must be right-justified and gaps must be filled in with zeros.

Although alphabetics are permissible in this field, it is simpler to use a numeric coding system. According to this system, the first poem in each book would be referred to as 001; the tenth, as 010; and so on.

4. Line. "Line codes" are entered in columns 7, 8, and 9 of each TEXT CARD. These codes run sequentially from 001 to 999 and are unique for each line of text in any given part. Thus, whenever the "poem code" changes in the Casal project, a new "line code" sequence must be initiated.

Special "line codes." In order to preserve the correct sequence of line numbers in the text, special "line codes" must be entered in columns 7, 8, and 9 whenever headings are recorded in Field 6. The special "line codes" are:

00T - (zero zero T) for a poem TITLE

00S - (zero zero S) " " SUBTITLE

00D - (zero zero D) " " DEDICATION

5. Continuation. Column 10 shows whether the 70 columns of Field 6 contain an entire line of text, or whether additional cards have had to be used for transcribing the line in question.

As each new line of text appears, a new "line code" is entered in columns 7-9 of the TEXT CARD, and a zero (0) is recorded in column 10. If the whole line cannot fit into the "text" field of this card, the

overflow is punched on a continuation card. When a continuation card is prepared, all data pertaining to the line is reproduced from columns 1-9 of the TEXT CARD on which the line was started, and a one (1) is punched in column 10. If it is necessary to use more than one continuation card for the same line, the "continuation code" is increased by one as each successive card is prepared. Thus, in addition to the original TEXT CARD, a maximum of nine continuation cards may be used for a single line of text.

Format control. Although continuation cards permit the transcription of lines containing more than 70 printout characters and/or non-printable code data, their main function is format control. That is, they make it possible to insert unnumbered lines between two segments of text whose individual "line codes" are immutably sequential.

For example, in the following quotation, where line numbers are both sequential and invariable, it is necessary to insert a space between lines 92 and 93, and a $\begin{Bmatrix}\text{space}\\ * \ * \ *\\ \text{space}\end{Bmatrix}$ combination between lines 96 and 97:

89 Es tan bella ¡Señor! de tal encanto
90 revestida a mis ojos aparece,
91 que anubla mis pupilas triste llanto
92 si alguna vez en sombras desparece.

93 Haz que ese ardiente amor que me cautiva
94 muera en mi corazón ¡Dios soberano!
95 y que sólo en mi alma tu amor viva
96 sin el consorcio del amor mundano.--

* * *

97 Así dijo; dos lágrimas ardientes
98 por sus blancas mejillas resbalaron,
99 cual resbalan las gotas de rocío
100 por el cáliz del lirio perfumado.

The problem posed by lines 92-93 is merely a less complicated variant of the one posed by lines 96-97. For this reason, a solution to the latter would incorporate a solution to the former.

The $\begin{Bmatrix}\text{space}\\ * \ * \ *\\ \text{space}\end{Bmatrix}$ combination required between lines 96 and 97 is obtained through the use of continuation cards in the following way:

a. Code data is entered in columns 1-9 of the TEXT CARD pertaining to line 96. A zero (0) is punched in column 10 and the text is transcribed in Field 6.

b. Three continuation cards are then made out:

1) The first card contains all the data that was originally punched in columns 1-9 of the TEXT CARD. A one (1) is entered in column 10 and Field 6 is left blank.

2) The second card repeats the data punched in columns 1-9; it has a 2 in column 10; and it contains three asterisks in Field 6. (As shown on p. 64, a plus-sign should precede and follow the string of asterisks in order to inhibit the special shift function that asterisks have in PRORA.)

3) The third continuation card is exactly like the first, except that it has a 3 in column 10.

Once these cards have been punched, the operator is ready to prepare a TEXT CARD for line 97.[1]

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[1] Title, subtitle, and dedication cards may be continued like ordinary TEXT CARDS. It should be remembered, however, that a single blank line is automatically printed after a title, subtitle, and dedication when PRORA II and III are implemented.

B. The text itself (Field 6). Columns 11-80 are set aside for transcription of the text. Two kinds of material may be punched here, but in neither case may a given TEXT CARD contain more than 11 special input symbols (i.e., symbols that require conversion):

1. Headings. Included in this category are titles, subtitles, and dedications. Keypunching begins in column 11 and is done according to the conventions established on the TABLE CARD FORM. If a heading is longer than the 70 positions available in Field 6, or if esthetic considerations make it advisable to print less than 70 characters, the heading may be broken off at any convenient point in the field[1] and completed on a continuation card. Thus, a title such as "Endechas, a ũa cativa con quẽ andava d'amôres na Índia, chamada Bárbora," which consists of 71 regular and 7 special input symbols,[2] could be divided between a title card and one continuation card in the following manner:

Title Card *ENDECHAS, A 6UA CATIVA CON QU6E ANDAVA D'AM1ORES[3]

Cont. Card NA *INDIA, CHAMADA *B4AR3ORA

Begin punching in col. 11

---

[1] The remaining columns in Field 6 would be left blank.

[2] Blanks between words are considered as regular input symbols. Theoretically, there should be 8 special input symbols in the title: 3 shift characters for capitalization + 5 diacritic marks. However, except for upper-case Ñ, which is a unique combination (see p. 60), the Library chain cannot print a diacritic mark over a capital letter (e.g., Índia). This limitation, which must be taken into consideration when the keypunching is done, reduces the number of special input symbols from 8 to 7. A similar limitation would be faced by typists using standard typewriters equipped with diacritic marks. In normal typesetting also, the tendency is to avoid the diacritic-plus-capital combination, since a whole set of non-standard characters would be needed for each size and style of type used.

[3] It will be observed that the input convention for this excerpt from the Portuguese is based upon the "double-symbol punching" principle for diacritic-plus-vowel combinations. Here, 4=´(acute accent), 1=^(circumflex), and 6=~(tilde). The *(asterisk) is used as a shift character for capitalization.

All of the input symbols would be stored on tape by PRORA I, and would be centered and printed in CAPS by PRORA II/III in the following way:

ENDECHAS, A UA CATIVA CON QUE ANDAVA D'AMORES[1]
NA INDIA, CHAMADA BARBORA

Automatic positioning. One of the capabilities of PRORA II and III is the automatic positioning of headings. As illustrated below, titles and subtitles are centered over the body of the text, and dedications are right-justified so that their final character is vertically aligned with the last character of the longest line on the page.

The example on page 80 is drawn from Casal's Nieve. The title and subtitle are centered automatically. Because of its length, the dedication has been divided into two parts by the keypunch operator; both parts are automatically right-justified by PRORA. The Roman numeral is obtained by inserting a TEXT CARD between the dedication and the body of the text. This card is coded 00S in Field 4, and *I is punched in columns 11-12. Since the card is coded as a subtitle card, the contents of Field 6 are centered in the same way as the true subtitle, "Leyenda talmúdica." This coding method cannot be used for obtaining the Roman numeral II which introduces the second section of the poem, for subtitles cannot be inserted in the text proper. The correct method for obtaining the II would be the one used for printing the asterisks in the example on p. 76. Centering would be done manually by the keypunch operator.

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[1] The full capabilities of PRORA II and III are listed on pp. 95-106. Centering of titles is discussed below (see Automatic positioning).

Observe that no diacritic marks are printed over capital letters. Since all diacritics are stored on tape, however, no input data is really lost.

LA MUERTE DE MOISES

Leyenda talmúdica

(A la Sra. Aurelia
Castillo de González)

I

Ancha línea de púrpura franjeaba
el azul horizonte, donde el astro
dorado de la tarde se ocultaba,
y el cielo blanquecino semejaba
un ánfora volcada de alabastro.

Flotaban en el aire los aromas
de lentiscos, nopales y palmeras
crecidos de la mar en las riberas,
y amorosas bandadas de palomas
volaban a posarse en las higueras.

Las copas de los verdes sicomoros,
mecidas por los vientos del desierto,
mezclaban su rumor a los sonoros
mugidos prolongados de los toros
huyendo de la margen del Mar Muerto.[1]

2. Body of the text. In dealing with the body of the text, the keypunch operator records exactly what is shown on the manuscript, typescript, or printed edition that is handed to her. The only modifications that have to be made are those indicated on the TABLE CARD FORM which establishes the input conventions for the project.

Left margin. The left margin for the body of the text is fixed: keypunching will start in column 11 except in cases where indentation is shown on the input copy.

---

[1] Only the text proper is measured when centering and right-justification are computed. Line numbers are excluded from these computations.

Indentation. The indentation of text lines is most easily obtained through the use of a PROGRAM CARD. Once this card is affixed to the drum of the keypunch, the operator can skip columns in the same way as a typist does by using the "tab" mechanism on her machine. Obviously, the indentation settings in Field 6 of the PROGRAM CARD will vary with the project that is being run.

Right margin. Unlike computer typesetting equipment, the 1403 printer cannot right-justify its output.[1] This is no limitation where poetry is concerned, since lines of verse are hardly ever justified on the right. In prose selections, however, right-justification must be considered whenever the attractiveness of output is a desideratum. Although a perfect alignment of terminal characters cannot be achieved with the Library chain, disparities in line length can be substantially minimized by doing the following:

a. Calculating on the basis of 10 characters per inch, determine an ideal line length for the text in question. (Suppose that a length of 5 inches--in other words, 50 characters--is deemed the most appropriate for the job.)

b. Determine the TEXT CARD column at which the ideal line length will be reached. (Since keypunching begins at column 11, the ideal length will be reached at column 60.)

c. Establish the degree of permissible variation in line length. (Suppose that a variation of 5 positions is

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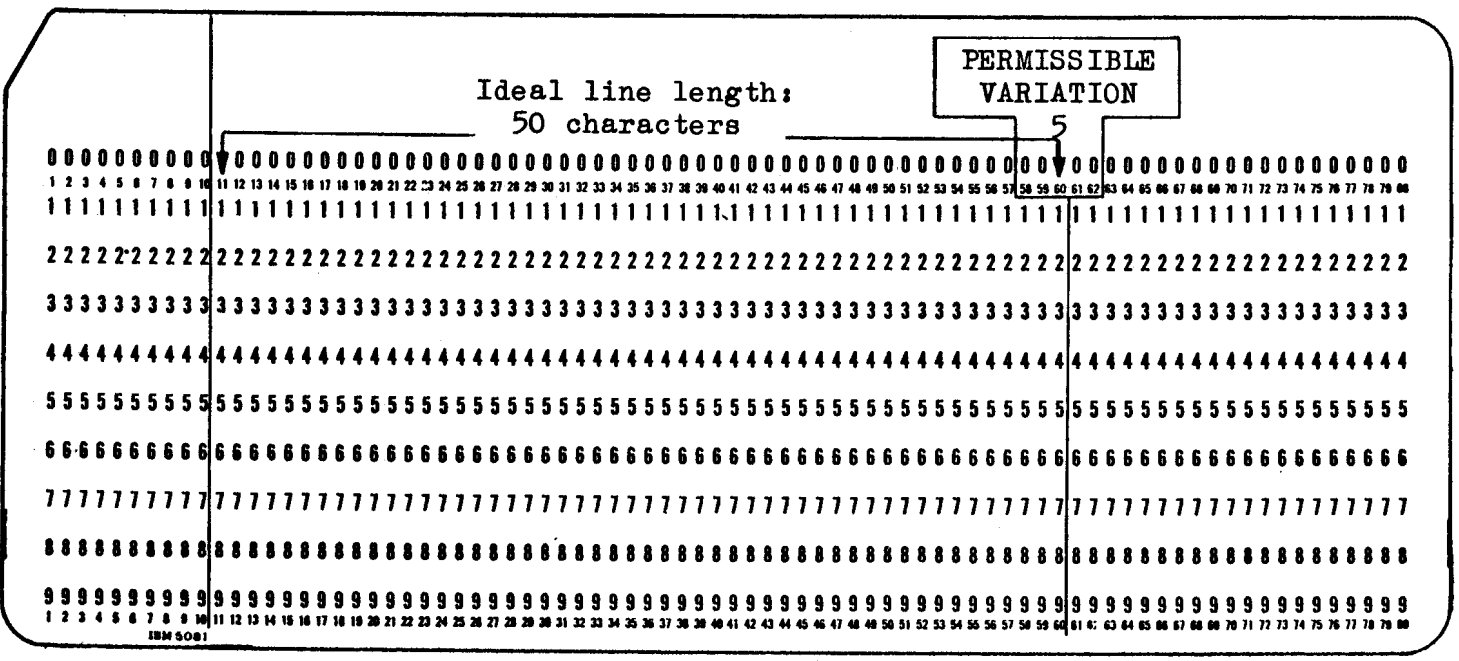
[1] The right-justification of dedications is not an exception, because they are not justified on the left.

Figure 16



deemed esthetically tolerable and also practicable as far as the syllabication norms of the language are concerned: i.e., no more than 52 and no less than 48 characters per line.)

d. Indicate these points on a blank input card (see Figure 16).

e. Submit the annotated card to the keypunch operator. This will be her guide to line length throughout the project. For best results, however, the operator should be supplied with explicit verbal instructions like the following:

1) When you reach column 58, count the number of non-printout symbols (e.g., shift characters and separately punched diacritic marks) that you have already recorded in Field 6. (Suppose that there are 5 symbols of this type between column 11 and column 58.)

2) Subtract this number from 50. (50-5=45. This means that you have punched only 45 printable characters so far.)

3) Remembering to deduct any non-printable symbols as you go, resume punching until you have a total of 47 characters on the card. At this point, consider the possible need for word-division.

4) Reminder: 52 is the maximum number of printable characters you can punch. Blanks and hyphens for word-division are considered as printable characters.

V. END-OF-PROJECT CARD

When an input data deck contains material from a single job, an End-of-project Card must be placed after the final TEXT CARD.[1] For example, if the project that is being run deals exclusively with the poetry of Julián del Casal, the input deck would be organized in the following way:

Header Cards for the project

Page-data Card
Table Cards
Text Cards

End-of-project Card

The End-of-project Card is equivalent to the last TEXT CARD in all respects, except that the code 00Z (zero zero Z) is entered in Field 4, and that any appropriate statement showing the significance of the card is entered in Field 6.[2] Thus, if the last TEXT CARD in the Casal set were to contain the following information:

0CR0410820QUE LA ROSA NO VIVA JUNTO AL CERDO.

the End-of-project Card would read:

0CR04100Z0END OF CASAL PROJECT.

Although the "job" described above deals with the work of a single author, it should be noted that a job may legitimately consist of works

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[1] Information punched on the End-of-project Card is transformed into the "trailer label" of the tape that is written by PRORA I.

[2] If the user wishes to leave Field 6 blank, he may do so.

by more than one author, provided that the information contained on the Page-data Card and on the Table Cards remains constant throughout. Under these conditions, the input deck would be organized in the same way as before with respect to the use and placement of the End-of-project Card:

Header Cards

Page-data Card
Table Cards

Text Cards for Casal
Text Cards for Silva
Text Cards for Darío

} Only one job in the project.

End-of-project Card

Whenever alterations are made on the Page-data Card and/or on the Table Cards, the first job is considered finished and a new job is begun. In a multiple-job project, it is necessary to signal job changes by using End-of-job Cards,[1] but the End-of-project Card must still be placed after the last TEXT CARD in the deck.

---

[1] See Section VI, below.

VI. END-OF-JOB CARD.

When an input data deck contains two or more jobs, an End-of-job Card is placed after all but the last set of TEXT CARDS.

For example, if the project that is being run includes a Spanish text (poetry of Casal), plus an Italian text (poetry of Pascoli), plus a French text (poetry of Baudelaire), the input deck would be arranged in this manner:

Header Cards for the project

Page-data Card
Table Cards
Text Cards
End-of-job Card } Job 1: Casal

Page-data Card
Table Cards
Text Cards
End-of-job Card } Job 2: Pascoli

Page-data Card
Table Cards
Text Cards } Job 3: Baudelaire

End-of-project Card

As shown above, an End-of-job Card is used only after Jobs 1 and 2, while an End-of-project Card is used after Job 3, which is the last in the series.

The End-of-job Card is the same as the last TEXT CARD in the set, except that the code 00E (zero zero E) is entered in Field 4, and that any appropriate statement showing the significance of the card is entered in Field 6.[1] Thus, if the last TEXT CARD in the Casal set were to contain the following information:

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[1] If the user wishes to leave Field 6 blank, he may do so.

```
0CH0490320AL RESPLANDOR ROSADO DE LA AURORA.
```

the End-of-job Card would read:

```
0CH04900E0END OF CASAL JOB.
```

PART II

PROCESSING THE DATA

I. PROGRAM DESCRIPTION

PRORA I reads the input deck in a card-by-card fashion and takes the following action:

A. Information contained on the Header Cards is processed and recorded on tape in the form of a single "header label."

B. Information contained on the Page-data Card is processed and stored.

C. Information contained on the Table Cards is processed and stored.

D. Information contained on the Text Cards is processed as indicated below:

1. The codes in Fields 1-5 are checked for proper sequence.

2. When a title-code (00T) is found, two changes are made automatically:

   a. The page number is increased by 1. This means that the title will be printed on a new page.

   b. The data in Field 6 (i.e., the title) is assigned a print-line number corresponding to that indicated in columns 1-2 of the Page-data Card.

3. When a subtitle-code (00S) is found, the data in Field 6 (i.e., the subtitle) is automatically assigned to a position 2 print-lines below the title.[1]

---

[1] Unless it is pushed down by Continuation Cards (see pp. 76-77).

4. When a dedication-code (00D) is found, the data in Field 6 is assigned to a position 2 print-lines below the subtitle, or, if no subtitle is present, 2 lines below the title.[1]

5. The first line of text on title pages is assigned a print-line number equivalent to the number shown in columns 3-4 of the Page-data Card. This rule applies to all title pages except those whose "heading block" activates the Automatic Bypass Feature.[2]

6. The first line of text on non-title pages is assigned a print-line number equivalent to the number shown in columns 5-6 of the Page-data Card.

7. The last line of text on any full page is one whose print-line number equals the number shown in columns 7-8 of the Page-data Card. After this line of text has been processed, the page number is increased by 1 and the print-line register is set back to the specified starting position.

8. The textual material in Field 6 is converted according to instructions received from the Table Cards.

9. A complete output record for each Text Card is assembled and recorded on tape.

E. If an End-of-job Card appears, steps B-D will be repeated in a manner prescribed by the new instructions.

F. If an End-of-project Card appears, a "trailer label" will be written and the tape will be rewound.

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[1] Unless it is pushed down further by Continuation Cards (see pp. 76-77).

[2] See p. 22.

II. TAPE FORMAT

A. Header label. The header label consists of information found on Header Cards 1 and 2. This label is 132 positions long.[1]

B. Tape-record. Each Text Card produces a tape-record of 132 positions. A blank Continuation Card does not produce a tape-record, but does cause the print-line number of the next sequential line of text to be increased.

1. Positions 1-71 of each record are reserved for all primary symbols and blanks which appear on the Text Card.[2]

2. Positions 72-88 contain eight "words" as indicated below:

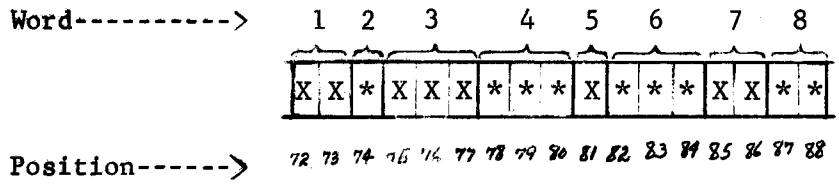
WORD	POSITION	CONTENTS	
1	72-73	"Author" code	(taken from Field 1 of the Text Card)
2	74	"Book" code	(taken from Field 2 of the Text Card)
3	75-77	"Part" code	(taken from Field 3 of the Text Card)
4	78-80	"Line" code	(taken from Field 4 of the Text Card)
5	81	"Continuation" code	(taken from Field 5 of the Text Card)
6	82-84	Page number	(i.e., the number of the page on which this line of text will be printed)
7	85-86	Print-line number	(i.e., the number of the print-line on which this line of text will be printed)
8	87-88	Line length	(i.e., the number of the position occupied by the last non-blank character in the line)

---

[1] The term positions is used here to mean BCD characters.

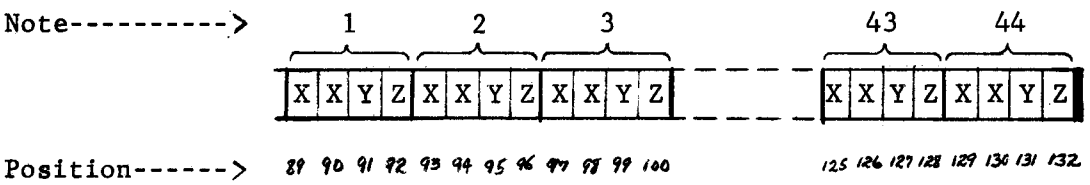
[2] Since no more than 70 characters can be punched in Field 6 of a Text Card, position 71 of the tape-record will never be utilized.

TAPE



3. Positions 89-132 are left available for a maximum of eleven 4-position "notes." These notes provide information about input characters which must be capitalized or treated as secondary symbols at printout. Notes are constructed in the following manner:

TAPE



a. "XX" is a 2-digit entry showing the location of each text-line character that requires a secondary symbol.

b. "Z" is the code of the secondary symbol. This code is taken from TABLE CARD 3.

c. "Y" is the WORDMARK code. It is taken from TABLE CARD 4, and shows how the secondary symbol is to be printed.[1]

---

[1] See the SUMMARY OF WORDMARK (W) CODES on Chart I and the full explanation on p. 71.

Since each tape-record has room for only 11 notes, no Text Card may contain more than 11 characters that require special handling (i.e., conversion).

C. Trailer label. The trailer label is written when an End-of-project Card is found. Information concerning the contents and location of this card is given on pp. 84-85.

III. OPERATION PROCEDURES

A. Place program deck first. (PRORA I has been assembled in SPS.)

B. Place input data deck second. The input deck is to be arranged in one of the following ways, depending on the nature of the project:

1. Single-job project:

Card type	Number	Suggested color
Header	2	green
Page-data	1	brown
Table	4	salmon
Text	variable	natural
End-of-project	1	red

2. Multiple-job project:

Card type	Number	Suggested color
Header	2	green
Page-data	1	brown
Table	4	salmon
Text	variable	natural
End-of-job	1	yellow
Page-data	1	brown
Table	4	salmon
Text	variable	natural
End-of-project	1	red

C. Sequence of operations:

1. Ready IBM Card Reader.

2. Ready IBM 1403 Printer with standard print-chain. (The special "Library chain" is not needed at this time.)
3. Ready tape on Unit 1.
4. No special switches are needed.
5. Load the program.
6. Final stop will be indicated by a message "END OF PROJECT" on the printout.

D. Entries made on Text Cards will be checked for the following errors:

ERROR 1: A Text Card contains a special code other than 00T, 00S, 00D, 00E, or 00Z in Field 4.

ERROR 2: Continuation Cards are not in proper order (i.e., a sequence error has been discovered in Field 5).

ERROR 3: The "line" codes in Field 4 are not in correct order.

ERROR 4: The "part" code in Field 3 has changed before the appearance of a new title-card.

ERROR 5: The "book" code in Field 2 has changed before the appearance of a new title-card.

ERROR 6: The "author" code in Field 1 has changed before the appearance of a new title-card.

ERROR 7: More than 11 special characters have been found in Field 6.

In addition to printing "ERROR n," the 1403 will print the identification of the card in error. The program does not stop, but continues processing the input material.

P R O R A I I

PRORA II accepts as input a literary text that has been processed and stored on tape by PRORA I, and prints that text in "standard" format.[1] According to conventions established by the user, printed output may contain any of 97 characters. Among these are 26 lower-case letters, 26 upper-case letters, 10 numbers, 8 diacritics, 11 punctuation marks,[2] 15 special signs,[3] and a space between words.

I. HARDWARE

The following machines are required for PRORA II:

A. An IBM 1401 or 1460 computer with an 8K memory and all special 1401 features except "divide" hardware.

B. An IBM 1402 Card Reader.

C. An IBM 1403 Printer equipped with the special "Library chain."

D. An IBM 7330 Tape Unit or its equivalent.

II. INPUT

A. Cards.

1. The program deck for PRORA II is placed first.

2. A single Page-data Card is placed after the program deck. This card requires that entries be made in three fields:

---

[1] See the illustrations of this format on pp. 4 and 6.

[2] Although not shown on Chart I, the exclamation point is included in this number. See pp. 66-68 for an explanation of how this punctuation mark is obtained.

[3] The plus-sign and the special minus-sign (shown on Chart I) are not included in this number, for they cannot be printed.

a. Column 1. This column controls the printing or the suppression of line numbers:

If a 0 (zero) is punched in this column, each line of text will be preceded by its line number. This number is equivalent to the "line" code that was entered in Field 4 of the Text Card, except that all zeros appearing at the left are suppressed at printout.

If a 1 (one) is punched in this column, line numbers will not be printed.

b. Column 2. Any character entered in this column will be printed between the line number and the text which follows. For example:

If a period (.) is desired after the line number, punch a period in column 2.

If no punctuation or special sign is desired between the line number and the text, leave column 2 blank.

c. Column 3. This column controls the printing or the suppression of page numbers:

If a 0 (zero) is entered in this column, each page will be numbered in the upper left- and upper right-hand corners.

If a 1 (one) is punched in this column, page numbers will not be printed.

3. The Page-print-selection Card determines which pages of the text will be printed or re-printed after corrections have been made on the tape-record.

   a. Columns 1-3. An entry in these columns shows the number of the first page that is to be printed.

   b. Columns 4-6. An entry in these columns shows the number of the last page that is to be printed.

      1) If the entire corpus is to be printed, enter 001 (zero zero 1) in columns 1-3 and 999 in columns 4-6.

      2) If a single page of text is to be re-printed with modifications after the entire corpus has been printed, one Page-print-selection Card will be used. (For example, if page 49 is to be re-printed, the card will contain 049 in columns 1-3 and in columns 4-6.) When processed, the card will cause the up-dated page to be selected from the tape-record, and PRORA will print only that page.

      3) If more than one page is to be re-printed with modifications, a series of Page-print-selection Cards will have to be used. These cards must be arranged in ascending numeric order.

B. Tape.

In addition to the card input described above, the tape written by PRORA I must also be used.

III. OPERATION PROCEDURES

A. Place program deck first. (PRORA II has been assembled in SPS.)

B. Place the Page-data Card second. If more than one job is to be printed, there should be as many Page-data Cards as jobs.

C. Place the Page-print-selection Card third.

D. Sequence of operations:

1. Ready IBM Card Reader.
2. Ready IBM 1403 Printer with Library chain.
3. Ready PRORA I tape on Unit 1.
4. No special switches are needed.
5. Load program.
6. After one job has been printed, the program will skip a page, print "END OF JOB," and skip another page. In order to continue, do not touch the tape: merely press the START button.
7. When all jobs have been processed, the program will rewind the tape, skip a page, and print "END OF PROJECT."

E. An ERROR HALT is provided, indicating that the program has tried to read the tape 10 times and cannot continue. A message to this effect is printed by the 1403.

P R O R A I I I

PRORA III accepts as input a literary text that has been processed and stored on tape by PRORA I, and prints that text in "special" format.[1]

I. HARDWARE

The following machines are required for PRORA III:

A. An IBM 1401 or 1460 computer with an 8 K memory and all special 1401 features except "divide" hardware.

B. An IBM 1402 Card Reader.

C. An IBM 1403 Printer equipped with the special "Library chain."

D. An IBM 7330 Tape Unit or its equivalent.

II. INPUT

A. Cards.

1. The program deck for PRORA III is placed first.

2. A single Page-data Card is placed after the program deck. This card contains entries in three fields:

a. Columns 1-3. This field controls the number of "repeat" lines that will be printed at the top and bottom of each page. For instance:

If a 002 (zero zero 2) is punched, two "repeat" lines will be printed. A sample of this format is given on p. 8.

If a 003 (zero zero 3) is punched, three "repeat" lines will be printed. A sample of this format is given on p. 10.

---

[1] The "special" format is described on pp. 8-15.

b. Columns 4-5. Entries in this field show where each page of the printed text is to be numbered. For example:

If you want each page of the text to be numbered on print-line 15, punch a 1 and a 5 in col-4-5, respectively.

If you want each page of the text to be numbered on print-line 20, punch a 2 and a 0 (zero) in columns 4-5, respectively.

c. Column 6. This field contains the character that is to appear between the "line" number and the text.

3. The Page-print-selection Card determines which pages of the text will be printed or re-printed after corrections have been made on the tape-record.

a. Columns 1-3. An entry in these columns shows the number of the first page that is to be printed.

b. Columns 4-6. An entry in these columns show the number of the last page that is to be printed.

1) If the entire corpus is to be printed, enter 001 (zero zero 1) in columns 1-3 and 999 in columns 4-6.

2) If a single page of text is to be re-printed with modifications after the entire corpus has been printed, one Page-print-selection Card will be used. (For example, if page 49 is to be re-printed, the card will contain 049 in columns

1-3 and in columns 4-6.) When processed, the card will cause the up-dated page to be selected from the tape-record, and PRORA will print only that page.

3) If more than one page is to be re-printed with modifications, a series of Page-print-selection Cards will have to be used. These cards must be arranged in ascending numeric order.

B. Tape.

In addition to the card input described above, the tape written by PRORA I must also be used.

III. OPERATION PROCEDURES

A. Place program deck first. (PRORA III has been assembled in SPS).

B. Place the Page-data Card second. If more than one job is to be printed, there should be as many Page-data Cards as jobs.

C. Place the Page-print-selection Card third.

D. Sequence of operations:

1. Ready IBM Card Reader.
2. Ready IBM 1403 Printer with Library chain.
3. Ready PRORA I tape on Unit 1.
4. No special switches are needed.
5. Load the program.
6. After one job has been printed, the program will skip a page, print "END OF JOB," and skip another page. In order to continue, do not touch the tape: merely press the START button.

7. When all jobs have been processed, the program will rewind the tape, skip a page, and print "END OF PROJECT."

E. Two ERROR HALTS are provided:

1. A message: "BUFFER OVERFLOW — DUMP TAPE 1" indicates an incorrect page number sequence on the tape produced by PRORA I. Dump this tape and check for errors in Text Card identifications.

2. An error halt is provided, indicating that the program has tried to read the tape 10 times and cannot continue. A message to this effect is printed by the 1403.

ANSWERS TO EXERCISES

PAGE-DATA CARD

Ex. 1: "Standard" format printout (PRORA II)

2. The title should appear on print-line..... 0 8
3. The first line of text on title pages..... 1 4
4. The first line of text on non-title pages..... 0 8
5. The last line of text on all complete pages..... 4 8

Ex. 2: "Special" format printout (PRORA III)

2. The title should appear on print-line..... 0 2
3. The first line of text on title pages..... 0 8 *
4. The first line of text on non-title pages..... 0 8
5. The last line of text on all complete pages..... 2 5

TABLE CARDS

Ex. 1: Italian

2.

	`	'	^	¨	°	~	¸	ˇ
a	à							
e	è	é						
i	ì							
o	ò							
u	ù							
n								
c								

3a. ✓

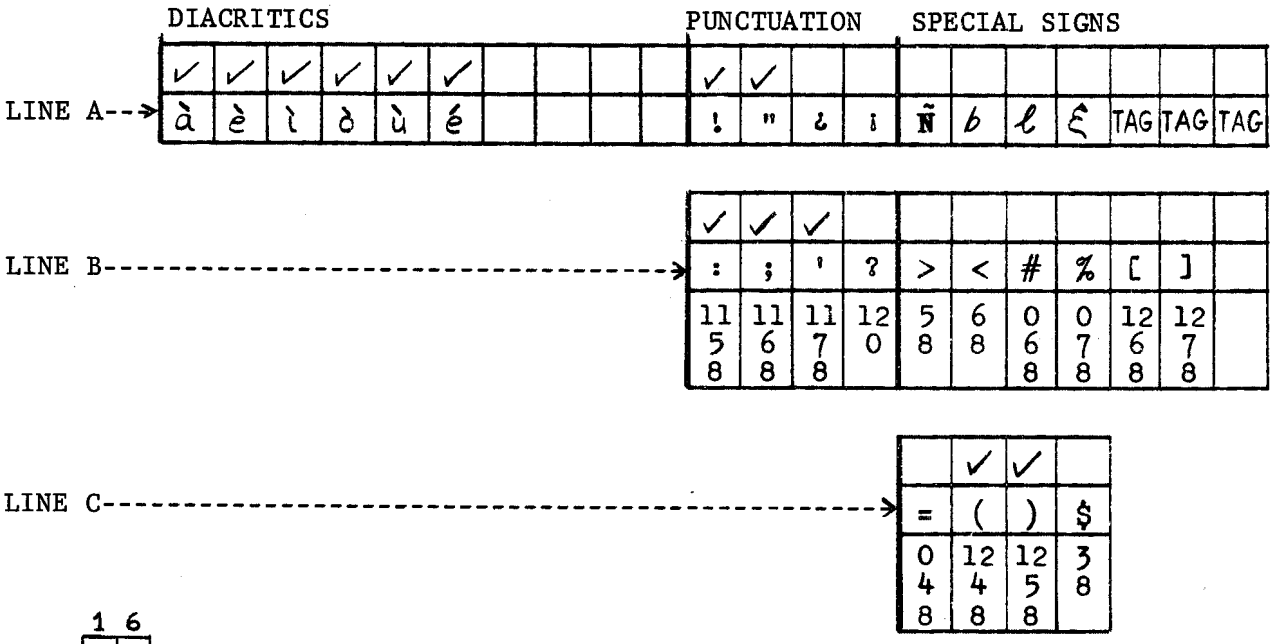
4.

à	è	ì	ò	ù	é		

---

* If you do not understand why the answer is 8 rather than 11, return to page 22 where the Automatic Bypass Feature is discussed.

6a-c.



6d. 1 6 / 1 0

6e. 6

6g. 6 is the maximum; but you should have checked only 3 characters in this case, because no more are required by the text.

6h. None. Therefore, nothing is entered on the MULTIPLE-PUNCH FORM.

7a-c.

(1)	à	è	ì	ò	ù	é	!	"	:	;	'			(		)
(2)	1	2	3	4	5	6	7	8	9	0	=	spec. -	/	(	$	)

If this was your answer to the question, you succeeded in establishing a correct and workable keypunch system. A more efficient one for the keypunch operator, however, is shown at the end of this manual. That system--with any minor modifications necessitated by your specific project--is recommended for Italian texts.

Note: You were not instructed to answer Statement 7d (which refers to Rows (4) to (7) of the GUIDE TO KEYPUNCHING), because information about TABLE CARD entries has not yet been provided. A detailed discussion of that phase of the project begins on p. 36. Turn to that page now.

Ex. 2: Spanish

2.

	`	´	^	¨	°	~	¸	ˇ
a		á						
e		é						
i		í						
o		ó						
u		ú						
n						ñ		
c								

3a.

✓

4.

á	é	í	ó	ú	ñ		

6a-c.

	DIACRITICS										PUNCTUATION				SPECIAL SIGNS						
	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓							
LINE A--→	á	é	í	ó	ú	ñ					¡	"	¿	ı	Ñ	♭	ℓ	Ɛ	TAG	TAG	TAG

	✓	✓		✓								
LINE B----------→	:	;	'	?	>	<	#	%	[	]		
	11 5 8	11 6 8	11 7 8	12 0	5 8	6 8	0 6 8	0 7 8	12 6 8	12 7 8		

LINE C----------→	=	(	)	$
	0 4 8	12 4 8	12 5 8	3 8

6d.

16
10

6e.

6

6g. 6 is the maximum; but you should have checked only 3 characters in this case, because no more are required by the text.

6h. None. Therefore, nothing is entered on the MULTIPLE-PUNCH FORM.

7a. None. Therefore, no LINE C characters are entered in Row (1).

7c.

(1)	á	é	í	ó	ú	ñ	!	"	¿	¡	:	;	?				(1)
(2)	1	2	3	4	5	6	7	8	9	0	=	SPEC. –	/	(	$	)	(2)

If this was your answer to the question, you succeeded in establishing a correct and workable keypunch system. A more efficient one for the keypunch operator, however, is shown at the end of this manual. That system--with any minor modifications necessitated by your specific project--is recommended for Spanish texts.

Note: You were not instructed to answer Statement 7d (which refers to Rows (4) to (7) of the GUIDE TO KEYPUNCHING), because information about TABLE CARD entries has not yet been provided. A detailed discussion of that phase of the project begins on p. 36. Turn to that page now.

Ex. 3: French

2.

	`	´	^	¨	°	~	¸	ˇ
a	à		â					
e	è	é	ê					
i			î					
o			ô					
u	ù							
n								
c							ç	

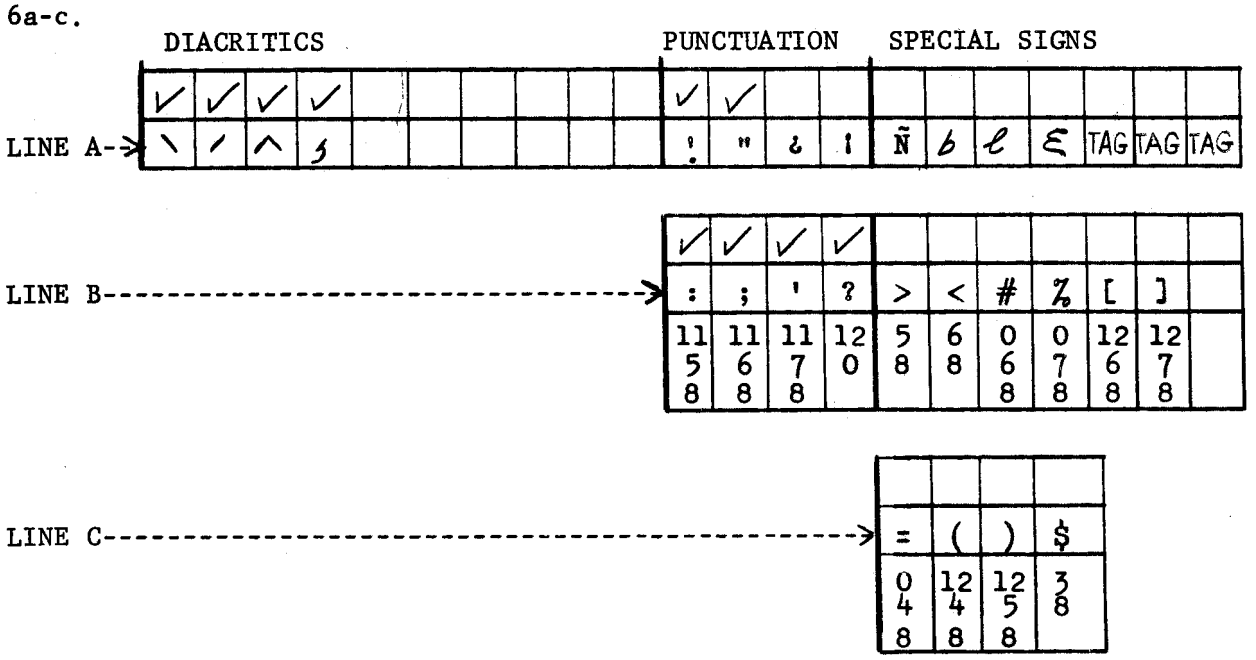
3b.

✓

5.

`	´	^	¸				

6a-c.



6d. 16

6e. 10

6g. 10 is the maximum; but you should have checked only 4 characters in this case, because no more are required by the text.

6h. None. Therefore, nothing is entered on the MULTIPLE-PUNCH FORM.

7a. None. Therefore, no LINE C characters are entered in Row (1).

7c.

(1)	\	/	^	¸	!	"	:	;	'	?							(1)
(2)	1	2	3	4	5	6	7	8	9	0	=	spec.	/	(	$	)	(2)

If this was your answer to the question, you succeeded in establishing a correct and workable keypunch system. A more efficient one for the keypunch operator, however, is shown at the end of this manual. That system--with any minor modifications necessitated by your specific project--is recommended for French texts.

Note: You were not instructed to answer Statement 7d (which refers to Rows (4) to (7) of the GUIDE TO KEYPUNCHING), because information about TABLE CARD entries has not yet been provided. A detailed discussion of that phase of the project begins on p. 36. Turn to that page now.

Class "b": Single-stroke punching (from p. 43)

(1)	(	)	(1)
(2)	(	)	(2)
(3)	29	61	(3)
(4)	12 4 8	12 5 8	(4)
(5)			(5)
(6)			(6)
(7)			(7)

Class "c": Single-stroke punching (from p. 49)

(1)	'	?	>	<	#	%	(1)
(2)	/	$	9	0	6	8	(2)
(3)	18	44	10	11	7	9	(3)
(4)	11 7 8	12 0	5 8	6 8	0 6 8	0 7 8	(4)
(5)							(5)
(6)							(6)
(7)							(7)

Class "d": Single-symbol punching (from p. 55)

(1)	ú	í	ó	á	é	ñ	ü	ï	(1)
(2)	1	2	3	4	5	6	7	8	(2)
(3)	2	3	4	5	6	7	8	9	(3)
(4)	0 4	12 9	11 6	12 1	12 5	11 5	0 4	12 9	(4)
(5)	1	1	1	1	1	1	1	1	(5)
(6)	2	2	2	2	2	5 8	4	4	(6)
(7)	5	5	5	5	5	5	5	5	(7)

Class "d": Double-symbol punching (from p. 59)

(1)	^	`	¨	´	¸	(1)
(2)	1	2	3	4	5	(2)
(3)	2	3	4	5	6	(3)
(4)						(4)
(5)	0	0	0	0	0	(5)
(6)	3	1	4	2	6 8	(6)
(7)	5	5	5	5	5	(7)

GUIDE TO KEYPUNCHING

Detach here

TABLE CARD FORM

(1)	ù	ì	ò	à	è	'	^	!	ç	¨	:	;	'	(	"	)
(2)	1	2	3	4	5	6	7	8	9	0	=	Spec. -	/	(	$	)

(3)	2	3	4	5	6	7	8	9	10	11	12	13	18	29	44	61
(4)	0 4	12 9	11 6	12 1	12 5			12 3 8	12 3		11 5 8	11 6 8	11 7 8	12 4 8		12 5 8
(5)	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1
(6)	1	1	1	1	1	2	3	11 7 8	6 8	4					11 7 8	
(7)	5	5	5	5	5	5	5	4	5	5					5	

SHIFT CHARACTERS

CAPITALIZATION: If a letter is to be capitalized, punch an asterisk (*) before it.

SUSPEND CONVERSION: Punch a plus-sign (+) before and after any character or string of characters in order to suspend its conversion function temporarily.

MULTIPLE-PUNCH FORM

Detach here

?	[	]							
12 0	12 6 8	12 7 8							

(3) ISN = column on TABLE CARDS

(4) TABLE CARD 1 { CODE of primary symbol. (See Chart I.)

(5) TABLE CARD 2 { 1 = print primary. 0 = suppress primary.

(6) TABLE CARD 3 { CODE of secondary symbol. Enter numeric portion only.

(7) TABLE CARD 4:

Blank = print primary l/c.
1 = print primary U/C.
2 = suppress secondary (no W).
3 = suppress secondary (W).
4 = print secondary l/c.
5 = print secondary U/C.

GUIDE TO KEYPUNCHING

Detach here

TABLE CARD FORM

(1)	ú	í	ó	á	é	ñ	¡	¿	ç	¨	:	;	!	(	"	)
(2)	1	2	3	4	5	6	7	8	9	0	=	spec. -	/	(	$	)

(3)	2	3	4	5	6	7	8	9	10	11	12	13	18	29	44	61
(4)	0 4	12 9	11 6	12 1	12 5	11 5			12 3		11 5 8	11 6 8	12 3 8	12 4 8		12 5 8
(5)	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
(6)	2	2	2	2	2	5 8	0	9	6 8	4			11 7 8		11 7 8	
(7)	5	5	5	5	5	5	5	5	5	5			4		5	

Detach here

MULTIPLE-PUNCH FORM

?	[	]	'						
12 0	12 6 8	12 7 8	11 7 8						

(3) ISN = column on TABLE CARDS

(4) TABLE CARD 1 { CODE of primary symbol. (See Chart I.)

(5) TABLE CARD 2 { 1 = print primary. 0 = suppress primary.

(6) TABLE CARD 3 { CODE of secondary symbol. Enter numeric portion only.

(7) TABLE CARD 4:

Blank = print primary l/c.
1 = print primary U/C.
2 = suppress secondary (no W).
3 = suppress secondary (W).
4 = print secondary l/c.
5 = print secondary U/C.

SHIFT CHARACTERS

CAPITALIZATION: If a letter is to be capitalized, punch an asterisk (*) before it.

SUSPEND CONVERSION: Punch a plus-sign (+) before and after any character or string of characters in order to suspend its conversion function temporarily.

GUIDE TO KEYPUNCHING

Detach here

TABLE CARD FORM

(1)		`		^	é	ç	¨	!	?		:	;	'	(	"	)
(2)	1	2	3	4	5	6	7	8	9	0	=	spec. -	/	(	$	)

(3)	2	3	4	5	6	7	8	9	10	11	12	13	18	29	44	61
(4)					12 5	12 3		12 3 8	12 0		11 5 8	11 6 8	11 7 8	12 4 8		12 5 8
(5)		0		0	1	1	0	1	1		1	1	1	1	1	1
(6)		1		3	2	6 8	4	11 7 8							11 7 8	
(7)		5		5	5	5	5	4							5	

MULTIPLE-PUNCH FORM

Detach here

[	]								
12 6 8	12 7 8								

(3) ISN = column on TABLE CARDS

(4) TABLE CARD 1 { CODE of primary symbol. (See Chart I.)

(5) TABLE CARD 2 { 1 = print primary. 0 = suppress primary.

(6) TABLE CARD 3 { CODE of secondary symbol. Enter numeric portion only.

(7) TABLE CARD 4:

Blank = print primary l/c.
1 = print primary U/C.
2 = suppress secondary (no W).
3 = suppress secondary (W).
4 = print secondary l/c.
5 = print secondary U/C.

SHIFT CHARACTERS

CAPITALIZATION: If a letter is to be capitalized, punch an asterisk (*) before it.

SUSPEND CONVERSION: Punch a plus-sign (+) before and after any character or string of characters in order to suspend its conversion function temporarily.

Chart I and

Chart I and Specifications Form

CHART I

ALPHABETICS (l/c)

S	ISN	CODE	CLASS
a	50	12 1	a
b	51	12 2	a
c	52	12 3	a
d	53	12 4	a
e	54	12 5	a
f	55	12 6	a
g	56	12 7	a
h	57	12 8	a
i	58	12 9	a
j	34	11 1	a
k	35	11 2	a
l	36	11 3	a
m	37	11 4	a
n	38	11 5	a
o	39	11 6	a
p	40	11 7	a
q	41	11 8	a
r	42	11 9	a
s	19	0 2	a
t	20	0 3	a
u	21	0 4	a
v	22	0 5	a
w	23	0 6	a
x	24	0 7	a
y	25	0 8	a
z	26	0 9	a

ALPHABETICS (U/C)

S	ISN	CODE	CLASS
A		W 12 1	f
B		W 12 2	f
C		W 12 3	f
D		W 12 4	f
E		W 12 5	f
F		W 12 6	f
G		W 12 7	f
H		W 12 8	f
I		W 12 9	f
J		W 11 1	f
K		W 11 2	f
L		W 11 3	f
M		W 11 4	f
N		W 11 5	f
O		W 11 6	f
P		W 11 7	f
Q		W 11 8	f
R		W 11 9	f
S		W 0 2	f
T		W 0 3	f
U		W 0 4	f
V		W 0 5	f
W		W 0 6	f
X		W 0 7	f
Y		W 0 8	f
Z		W 0 9	f

NUMERALS

S	ISN	CODE	CLASS
1	2	1	a ✓
2	3	2	a ✓
3	4	3	a ✓
4	5	4	a ✓
5	6	5	a ✓
6	7	6	a ✓
7	8	7	a ✓
8	9	8	a ✓
9	10	9	a ✓
0	11	0	a ✓

PUNCTUATION

S	ISN	CODE	CLASS
,	28	0 3 8	a
-	33	11	a
.	60	12 3 8	a
:		11 5 8	c
;		11 6 8	c
'		11 7 8	c
?		12 0	c
¿		W 9	e
¡		W 0	e
"		W 11 7 8	e

DIACRITICS

S	ISN	CODE	CLASS
`		W 1	d
´		W 2	d
^		W 3	d
¨		W 4	d
¸		W 5	d
~		W 5 8	d
¸		W 6 8	d
ˇ		W 12	d

SPECIAL SIGNS

S	ISN	CODE	CLASS
/	18	0 1	a ✓
=	12	0 4 8	b ✓
-	13	(spec.)	b ✓
(	29	12 4 8	b ✓
$	44	3 8	b ✓
)	61	12 5 8	b ✓
›		5 8	c
‹		6 8	c
#		0 6 8	c
%		0 7 8	c
¡		12 6 8	c
¿		12 7 8	c
Ñ		W 6	e
♭		W 7	e
ℓ		W 8	e
ξ		W 11 0	e

SUMMARY OF WORDMARK (W) CODES

(For Use With TABLE CARD 4)

Type of Symbol Affected	Printout Result	Add W	No W	Code
Primary	Print lower-case		✓	None
Primary	Print UPPER-CASE	✓		1
Secondary	Do not print		✓	2
Secondary	Do not print	✓		3
Secondary	Print lower-case		✓	4
Secondary	Print UPPER-CASE	✓		5

SHIFT CHARACTERS

S	ISN	CODE	CLASS
*	45	11 4 8	a
+		12	a

SPECIFICATIONS FORM

To the Project Director:

Fill in the boxes ☐ which have been reserved for you on each page of this form. By so doing, you will be able to make all decisions necessary for the successful completion of PRORA I, II, and III.

To the Keypunch Operator:

Spaces have been reserved for you in the left-hand margin of this form. Each space corresponds to a statement which you must read. When you have understood each statement perfectly, or have followed instructions given in the statement, put a check (√) in the appropriate space.

Perfect comprehension is the key to successful completion of your task. If you have any questions, ask your Director.

PRORA I

A. Header Cards

( )..... 1. Card color: green.

( )..... 2. The following descriptive statement should be entered in columns 1-70 of Header Card 1:

( )..... 3. The following descriptive statement should be entered in columns 1-60 of Header Card 2:

B. Page-data Card*

( )..... 1. Card color: brown.

( )..... 2. The title should appear on print-line..... ☐☐
Enter this figure in columns 1-2 of the Page-data Card. A one-digit number should be preceded by a 0 (zero) in column 1.

( )..... 3. The first line of text on title pages should appear on print-line ☐☐
Enter this figure in columns 3-4 of the Page-data Card. A one-digit number should be preceded by a 0 (zero) in column 3.

( )..... 4. The first line of text on non-title pages should appear on print-line..... ☐☐
Enter this figure in columns 5-6 of the Page-data Card. A one-digit number should be preceded by a 0 (zero) in column 5.

( )..... 5. The last line of text on all complete pages should appear on print-line..... ☐☐
Enter this figure in columns 7-8 of the Page-data Card.

* Use this PRINT-LINE GUIDE for making page-layout calculations.

C. Table Cards

( )..... 1. Card color: salmon.

2. The following alphabetic + diacritic combinations are required:

	\	/	^	..	°	~	˛	v
a								
e								
i								
o								
u								
n								
c								

3. The most practical method for obtaining these combinations is:
   a. Single-symbol punching (i.e., a substitute symbol will be punched in place of the alphabetic + diacritic combination).. ☐
   b. Double-symbol punching (i.e., a substitute symbol will be punched in place of the diacritic mark only)..... ☐

4. If you checked Statement 3a, enter all required alphabetic + diacritic combinations here: ☐☐☐☐☐☐☐☐

5. If you checked Statement 3b, enter all diacritic marks here: ☐☐☐☐☐☐☐☐

6. Go to the CHARACTER SELECTION FORM on page 2a.
   a. In LINE A, under the heading "DIACRITICS," show the choices you made in Statements 4 and/or 5.
   b. Put a check (√) above all LINE A characters that will be needed at printout. Be sure to check the Diacritic entries you just inserted.
   c. Put a check (√) above all LINE C characters that will be needed at printout.
   d. Count the number of checks above LINE A and LINE C characters and enter the total here..... 1 6 ☐☐
   e. Subtract this number from 16 and enter the result here: ☐☐

CHARACTER SELECTION FORM

	DIACRITICS									PUNCTUATION				SPECIAL SIGNS						
LINE A-->										:	"	¿	¡	$\tilde{N}$	b	ℓ	£	TAG	TAG	TAG

LINE B---------->	:	;	'	?	>	<	#	%	[	]	
	11 5 8	11 6 8	11 7 8	12 0	5 8	6 8	0 6 8	0 7 8	12 6 8	12 7 8	

LINE C---------->	=	(	)	$
	0 4 8	12 4 8	12 5 8	3 8

GUIDE TO KEYPUNCHING

Detach here

TABLE CARD FORM

(1)															
(2)	1	2	3	4	5	6	7	8	9	0	=	spec. –	/	(	$	)

(3)	2	3	4	5	6	7	8	9	10	11	12	13	18	29	44	61
(4)																
(5)																
(6)																
(7)																

MULTIPLE-PUNCH FORM

Detach here

(3) ISN = column on TABLE CARDS

(4) TABLE CARD 1 { CODE of primary symbol. (See Chart I.)

(5) TABLE CARD 2 { 1 = print primary. 0 = suppress primary.

(6) TABLE CARD 3 { CODE of secondary symbol. Enter numeric portion only.

(7) TABLE CARD 4:
- Blank = print primary l/c.
- 1 = print primary U/C.
- 2 = suppress secondary (no W).
- 3 = suppress secondary (W).
- 4 = print secondary l/c.
- 5 = print secondary U/C.

SHIFT CHARACTERS

CAPITALIZATION: If a letter is to be capitalized, punch an asterisk (*) before it.

SUSPEND CONVERSION: Punch a plus-sign (+) before and after any character or string of characters in order to suspend its conversion function temporarily.

f. Enter the same figure in the box provided in Statement g; Then follow the instruction given in that Statement.

g. Put a check (√) above the most frequently used characters in LINE B. The maximum number of checks you can insert is... 

h. Examine the unchecked LINE B characters and decide which will be needed at printout.

1) Enter each of these characters in one of the boxes provided on the MULTIPLE-PUNCH FORM (top row).

2) Beneath each of the characters, enter the CODE which corresponds to it (as shown on the CHARACTER SELECTION FORM).

7. Go to the TABLE CARD FORM on page 2a.

a. In Row (2), find all LINE C characters that you checked on the CHARACTER SELECTION FORM. Enter the same characters directly above in Row (1).

b. All other symbols in Row (2) may now be used as keypunch substitutes for LINE A and LINE B characters that have a check (√) above them on the CHARACTER SELECTION FORM.

c. In Row (1), write the desired printout character directly above the symbol you have chosen as its keypunch substitute.

d. Complete the TABLE CARD FORM according to instructions given in the Manual:

If the character in Row (1) is	Refer to pages
An alphabetic + diacritic combination	50-55
A diacritic mark alone	56-59
An exclamation point	66-68
A Class "e" character	60-61
A word-tag	68-69
A Class "c" character	45-49
A Class "b" character	41-43

( )..... 8. Punch Table Card 1. All entries in Row (4) of the TABLE CARD FORM are to be punched in the card column shown in Row (3).

( )..... 9. Punch Table Card 2. All entries in Row (5) of the TABLE CARD FORM are to be punched in the card column shown in Row (3).

( ).....10. Punch Table Card 3. All entries in Row (6) of the TABLE CARD FORM are to be punched in the card column shown in Row (3).

( ).....11. Punch Table Card 4. All entries in Row (7) of the TABLE CARD FORM are to be punched in the card column shown in Row (3).

( ).....12. Detach the lower portion of the GUIDE TO KEYPUNCHING. This should be used by the keypunch operator as a place-marker when the text is copied. If positioned beneath each line of text in the source document, the GUIDE TO KEYPUNCHING will provide the operator with an easy reference to the input system that has been established.

D. Text Cards

( )..... 1. Card color: natural.

( )..... 2. The "author" code is [ ]. Enter this code in columns 1-2 of each Text Card.

( )..... 3. The "book" code is [ ]. Enter this code in column 3 of each Text Card.

( )..... 4. The "part" code runs sequentially from 001 (zero zero 1) and is increased by 1 each time a new part is begun. Enter this code in columns 4-6 of each Text Card.

( )..... 5. The "line" code runs sequentially from 001 (zero zero 1) within each part and is increased by 1 every time a new text-line is begun. Enter this code in columns 7-9 of each Text Card.

( )..... 6. For titles, subtitles, and dedications, use the following codes in columns 7-9:

title.....00T (zero zero T)
subtitle.....00S (zero zero S)
dedication.....00D (zero zero D)

( )..... 7. Punch a 0 (zero) in column 10 of each Text Card, except when Continuation Cards are used. Continuation Cards are coded sequentially from 1-9 in column 10.

( )..... 8. No blanks may appear in columns 1-10. Use zeros instead wherever necessary.

( )..... 9. The punching of titles, subtitles, and dedications always begins in column 11.

( ).....10. At printout, PRORA automatically skips one space between title and subtitle, subtitle and dedication, dedication and the first printed line of text. If more than one space is needed in any of these positions, insert one Continuation Card for each additional space desired.

( ).....11. Blanks may appear wherever needed in columns 11-80 of Text Cards and Continuation Cards.

( ).....12. Indentations (i.e., a series of blanks at the left) are permitted when text-lines are transcribed in columns 11-80. Indentations should be controlled by the Program Card which is affixed to the drum of the keypunching machine.

( ).....13. If a space is needed between stanzas, paragraphs, or similar divisions of the text, insert a Continuation Card. The number of spaces needed will determine the number of Continuation Cards used.

( ).....14. See pp. 76-77 of the Manual if a combination similar to the one shown below appears in the source document:

text-line
←--space
* * *
←--space
text-line

( ).....15. Use the detached portion of the GUIDE TO KEYPUNCHING (p. 2a) as a place-marker and reference sheet when transcribing the text.

E. End-of-project Card

( )..... 1. Card color: red.
( )..... 2. The last line of text has been transcribed onto Text Cards.
( )..... 3. The project consists of:
  a. One "job" (i.e., the information contained on the Page-data Card and on the TABLE CARD FORM applies to all of the material that is being processed)..... ☐
  b. More than one "job" (i.e., the information contained on the Page-data Card and /or on the TABLE CARD FORM does not serve for all of the material that is being processed)..... ☐
( )..... 4. If the project consists of one "job" only (see Statement 3a), make out an End-of-project Card:
  a. Duplicate all data appearing in columns 1-6 of the last Text Card that you punched.
  b. Enter the code 00Z0 (zero zero Z zero) in columns 7-10 of the End-of-project Card.
  c. Enter the following statement in columns 11-80 of the card:

( )..... 5. If the project consists of more than one "job" (see Statement 3b) and you have transcribed all of the material in the last job, make out an End-of-project Card as instructed in 4a,b,c.
( )..... 6. If the project consists of more than one "job" (see Statement 3b) and you have transcribed all of the material in any job except the last one, make out an End-of-job Card as shown in Section F.

F. End-of-job Card

( )..... 1. Card color: yellow.
( )..... 2. The last line of text for this "job" has been transcribed.
( )..... 3. This is not the last "job" in the project.
( )..... 4. Make out an End-of-job Card:
  a. Duplicate all data appearing in columns 1-6 of the last Text Card that you punched.
  b. Enter the code 00E0 (zero zero E zero) in columns 7-10 of the End-of-job Card.
  c. Enter the following statement in columns 11-80 of the card:

( )..... 5. Get a new SPECIFICATIONS FORM from your Director and follow all instructions in Sections B, C, D, E (and F, if necessary).

PRORA II

Standard Format

If a Standard Format printout is desired, complete this part of the form. Show choices by inserting checks (✓) or requested preferences in the boxes provided below.

A. Page-data Card

( )..... 1. Card color: brown.

( )..... 2. Line numbers:

In column 1:
- punch a 0 (zero) IF ☐ the line number should be printed before each line of text.
- punch a 1.....IF ☐ the line number should not be printed before each line of text.

In column 2:
- leave a blank....IF ☐ a blank should follow the line number.
- punch as shown...IF ☐ this punctuation mark should follow the line number.

( )..... 3. Pagination:

In column 3:
- punch a 0 (zero) IF ☐ the page number should be printed on each page.
- punch a 1.....IF ☐ the page number should be suppressed from each page.

B. Page-print-selection Card

( )..... 1. Card color: blue.

( )..... 2. The first page to be printed is ☐☐☐. Enter this figure in columns 1-3 of the Page-print-selection Card. Use zeros instead of blanks.

( )..... 3. The last page to be printed is ☐☐☐. Enter this figure in columns 4-6 of the Page-print-selection Card. Use zeros instead of blanks.

PRORA III

Special Format

If a Special Format printout is desired, complete this part of the form. Show choices by inserting checks (✓) or requested preferences in the boxes provided below.

A. Page-data Card

( )..... 1. Card color: brown.

( )..... 2. "Repeat" lines:

a. The following number of "repeat"lines should be printed at the top and bottom of each page..... ☐

b. Write the same number in the box provided in Statement c.

c. In columns 1-3, punch [0|0|].

( )..... 3. Pagination:

a. Each page of the printout should be numbered on print-line.. ☐☐

b. Write the same number in the box provided in Statement c.

c. In columns 4-5, punch ☐☐. No blanks are permitted here.

( )..... 4. Line numbers:

In column 6:
- leave a blank....IF ☐ a blank should follow the line number.
- punch as shown...IF ☐ this punctuation mark should follow the line number.

B. Page-print-selection Card

( )..... Follow instructions given in PRORA II, Section B.

CONTENTS:
1 booklet in pocket