

Hardware Systems Manual

Alan R. Baldwin

96 SHEETS • 5 x 5 QUAD
10 $\frac{1}{8}$ x 7 $\frac{1}{8}$ • 53-110



NATIONAL BLANK BOOK COMPANY, INC.
Holyoke, Massachusetts 01040 • Made in USA

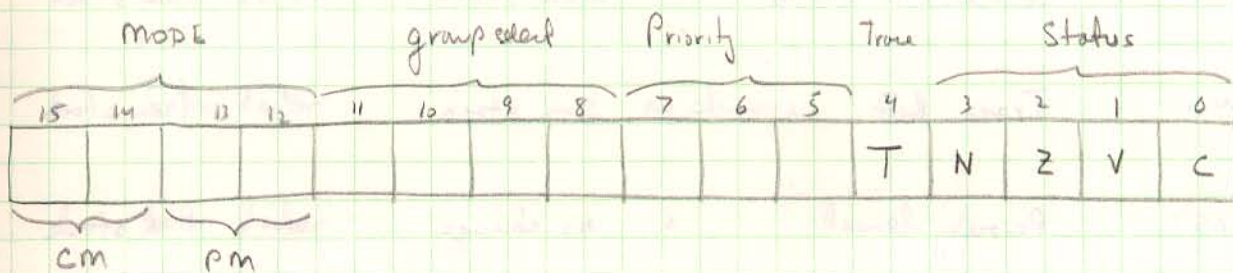
ARB Computer
Hardware Systems Manual

Index

2

Processor Registers

PROCESSOR STATUS WORD 17777776 (177776)₈



Bits

15-14 Current mode of memory management (See MM6T)

13-12 Previous mode of memory management (See MM6T)

11-8 Memory management group select Bits (See MM6T)

7-5 Processor priority level (Hardware levels 4-7 implemented)

4 Trace bit

3-0 Processor status bits

N - sign

Z - zero

V - arithmetic overflow

C - carry flag

Notes on PSR operation (Hardware & Microcoding)

<u>PSR Bits</u>		<u>USER RTI/RTT</u>	<u>Kernel RTI/RTT</u>
<03:00>	Condition Codes	from stack	from stack
<04>	Trace Bit	from stack	from stack
<07:05>	Priority level	No change	from stack
<09:08>	Previous MM6T	No change	from stack (M) from <11:10> (H)
<11:10>	current MM6T	No change	from stack
<13:12>	Previous Mode	No change	from stack (M) from <15:14> (H)
<15:14>	Current mode	No change	from stack

* changed by Kernel or User Access if PSR is Mapped.

USER/KERNEL TRAPS & Interrupts

Explicit Address

from Vector *

from Vector no change

from Vector *

copied from <11:10> *

from Vector *

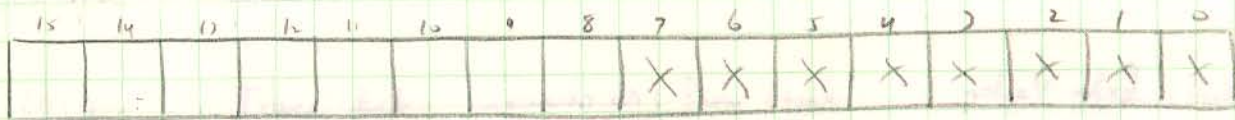
copied from <15:14> *

from Vector *

22 Dec 80
ARD

Stack Limit Register

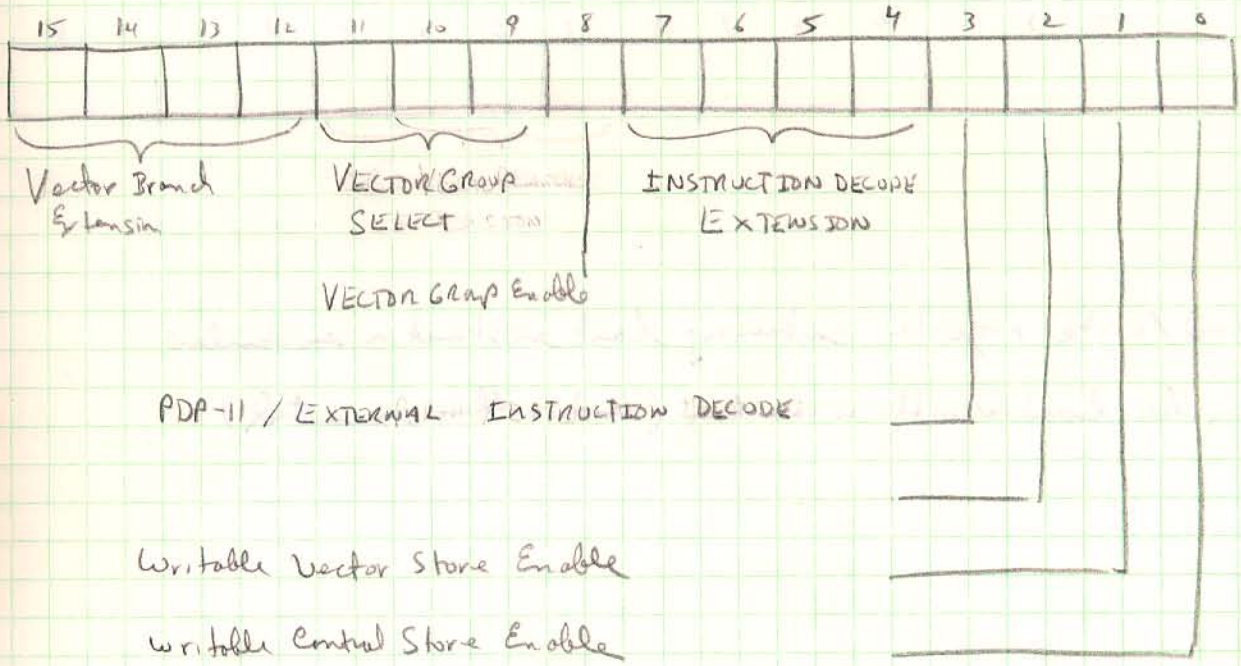
17777774 (177774)₈



The normal stack limit is 377_8 . The stack limit register allows the limit to be increased in steps of 400_8 in the kernel mode.

Processor Control Register

17777772 (177772)₈



Vector Branch Extension - 4 Bit extension of internal Vector Address

Instruction Decode Extension - 4 Bit extension Address for Instruction Decoder

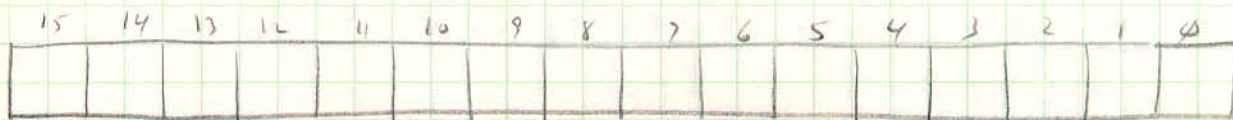
Vector Group - 1 PROM, 8 RAM Vector Groups for internal Vector levels

17 Jan 81
APD

INSTRUCTION REGISTER

1777770

$(177770)_5$



Read/write register containing last instruction executed -
may be loaded with instruction (which is then executed)

ARB System I/O & Vectors

	<u>Address</u>	<u>Vector</u>	<u>Interrupt</u>
RXD1	177170-2	264	
Cassette (TA11)	177500-6	260	
Keyboard	177560-2	60	(level 6 lev 5)
Printer	177564-6	64	
Clock	177546	100	level 7
Floating Point Error	_____	244	
MMGT	^{Status} 177572-6 177200-177376	250	
Console switches	177570	_____	
PSW Processor status word	177776	_____	
Stack limit Register	177774	_____	
Processor Control Register	177772	_____	
Destination Register	177770	_____	
CPU Registers	177700-737	_____	
Floating Point RAM	286 words Scratch 77 67000-777 000-103 used by FPP	_____	
MICRO TRAP Register Microcode option word	777760	_____	
SYSTEM SIZE WORD	777764	_____	
Permanent MICROCODE	740000-777777	_____	
Permanent And external VECTORS	177200-277	_____	
Writable Microcode	760000-773777	_____	
Writable And external Vectors	166000-166777	_____	
GRAPHICS Print Keyboard	176670-2	170	(level 4)
Graphics Printer	176674-6	174	lev 3

others assigned by Hardware

Address

vector

interrupt

FD-411P

177160

230

From Programmer

177110-117

—

~~BUS~~
Secondary
BUS Logic

177100-104

—

17770200

770200-367

UNIBUS MAP

~~173~~

~~170~~

~~174~~

270

274

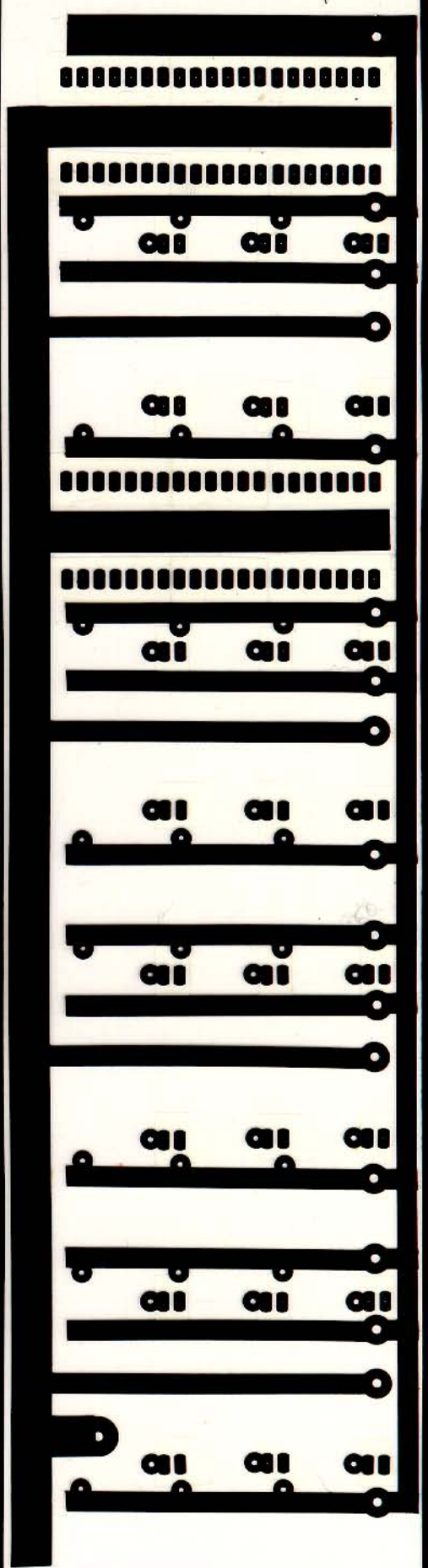
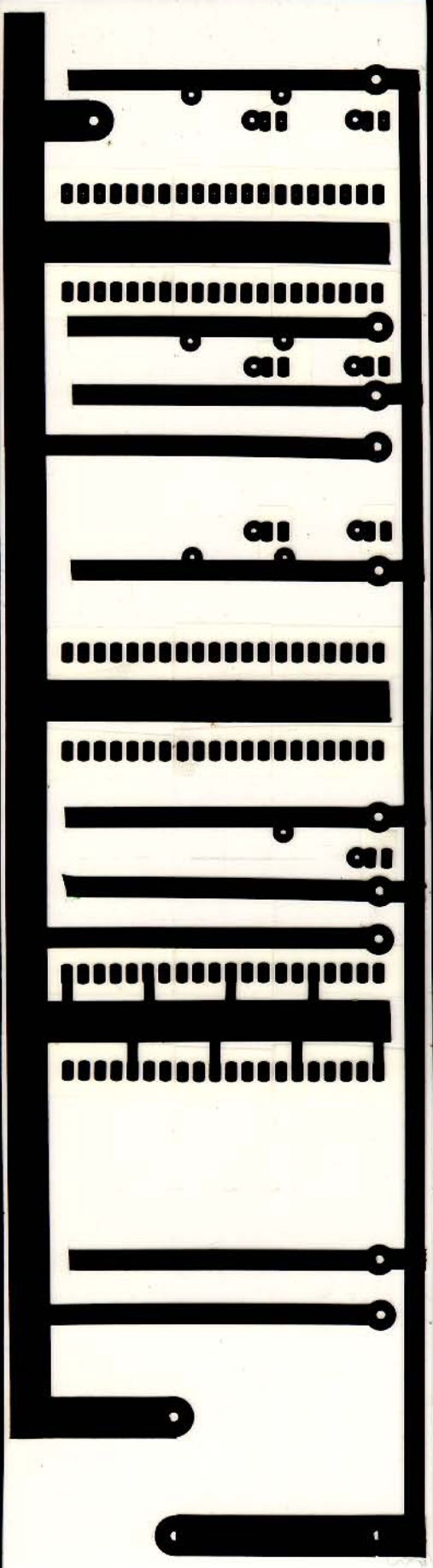
240

(level 2)
(level 1)
(level 0)

Reserved

Reserved

Reserved



100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

1000000 1000000 1000000 1000000 1000000

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

1000000 1000000 1000000 1000000 1000000

100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

1000000 1000000 1000000 1000000 1000000

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

1000000 1000000 1000000 1000000 1000000

.....

.....

100 100 100 011 011 011 011 011 011

.....

.....

100 100 100 011 011 011 011 011 011

.....

.....

100 100 100 011 011 011 011 011 011

.....

.....

100 100 100 011 011 011 011 011 011

.....

100 100 100 011 011 011 011 011 011

.....

.....

100 100 100 011 011 011 011 011 011

.....

100 100 100 011 011 011 011 011 011

.....

.....

100 100 100 011 011 011 011 011 011

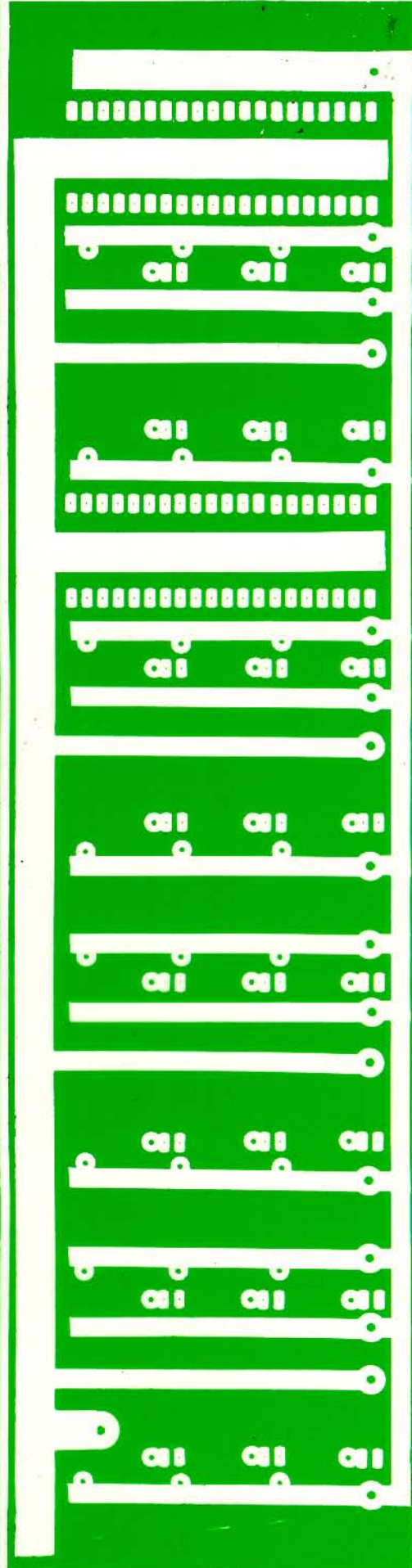
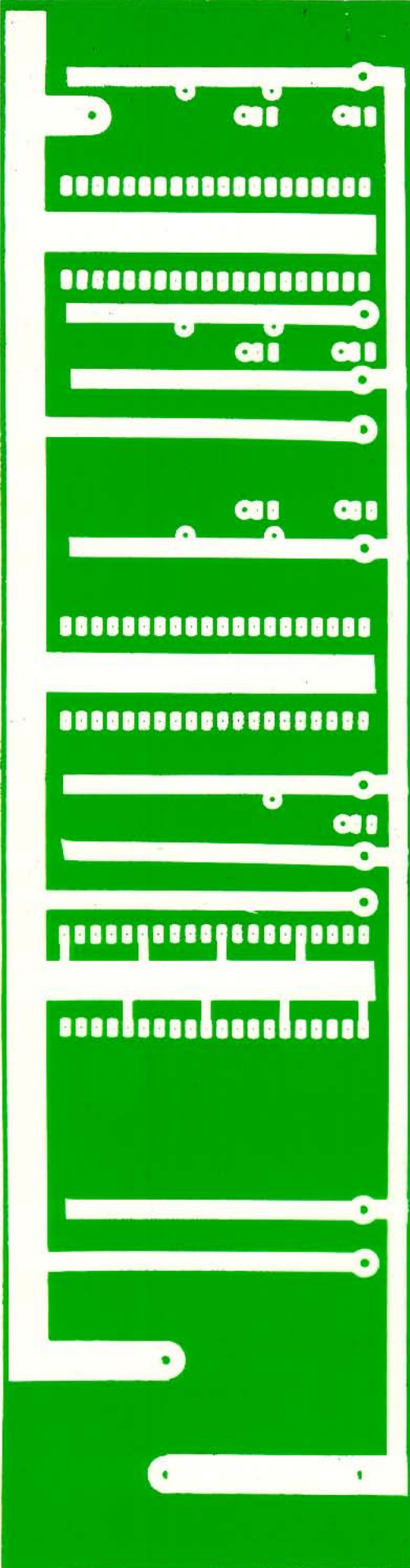
.....

100 100 100 100 100 100 100 100 100 100
1000000 1000000 1000000 1000000 1000000
0000000 0000000 0000000 0000000 0000000
100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100
1000000 1000000 1000000 1000000 1000000
0000000 0000000 0000000 0000000 0000000
100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100
1000000 1000000 1000000 1000000 1000000
0000000 0000000 0000000 0000000 0000000
100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100
1000000 1000000 1000000 1000000 1000000
0000000 0000000 0000000 0000000 0000000
100 100 100 100 100 100 100 100 100 100



110 110 110 011 011 011 011 011 011

11111111111111111111 11111111111111111111

11111111111111111111 11111111111111111111

110 110 011 011 011 011 011 011

11111111 11111111 11111111 11111111 11111111

01111111 01111111 01111111 01111111 01111111

110 110 011 011 011 011 011 011

11111111111111111111 11111111111111111111

11111111111111111111 11111111111111111111

110 110 110 110 110 110 110 110 011 011 011

11111111 11111111 11111111 11111111 11111111

01111111 01111111 01111111 01111111 01111111

011 011 011 011 011 011

110 110 110 110 110 110 110 110 011 011 011

11111111 11111111 11111111 11111111 11111111

01111111 01111111 01111111 01111111 01111111

110 110 110 110 110 110 110 110 011 011 011

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

0000000 0000000 0000000 0000000 0000000

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

0000000 0000000 0000000 0000000 0000000

100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

0000000 0000000 0000000 0000000 0000000

100 100 100 100 100 100 100 100 100 100

100 100 100 100 100 100 100 100 100 100

1000000 1000000 1000000 1000000 1000000

0000000 0000000 0000000 0000000 0000000

1000000 1000000 1000000 1000000 1000000

00000000000000000000 00000000000000000000

00000000000000000000 00000000000000000000

110 110 110 0 0 011 011 011 011 011 011

11111111 11111111 11111111 11111111 11111111

00000000 00000000 00000000 00000000 00000000

110 110 110 0 0 011 011 011 011 011 011

00000000000000000000 00000000000000000000

00000000000000000000 00000000000000000000

110 110 110 0 0 011 011 011 011 011 011

11111111 11111111 11111111 11111111 11111111

00000000 00000000 00000000 00000000 00000000

110 110 110 0 0 011 011 011 011 011 011

110 110 110 0 0 011 011 011 011 011 011

11111111 11111111 11111111 11111111 11111111

00000000 00000000 00000000 00000000 00000000

110 110 110 0 0 011 011 011 011 011 011

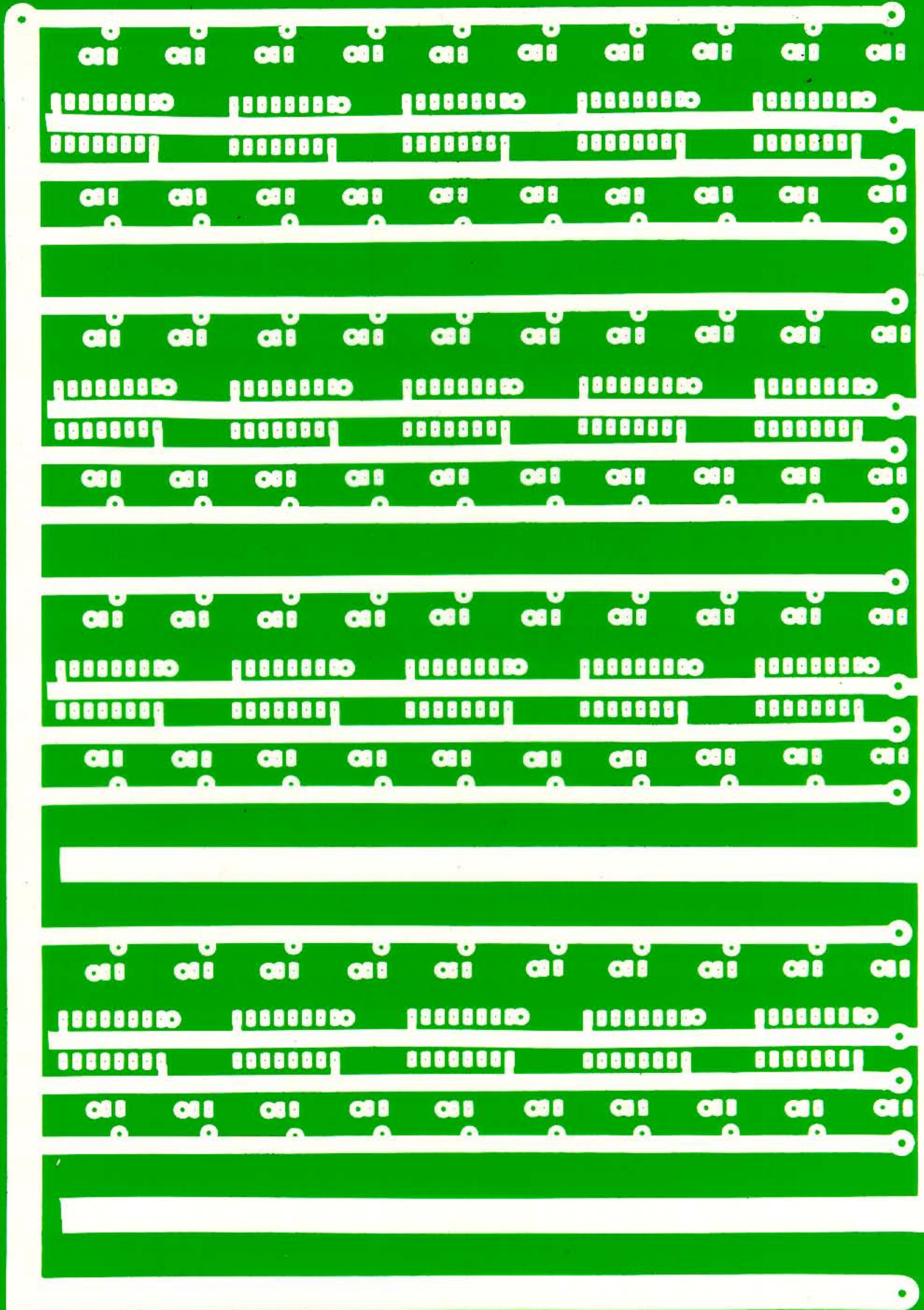
110 110 110 0 0 011 011 011 011 011 011

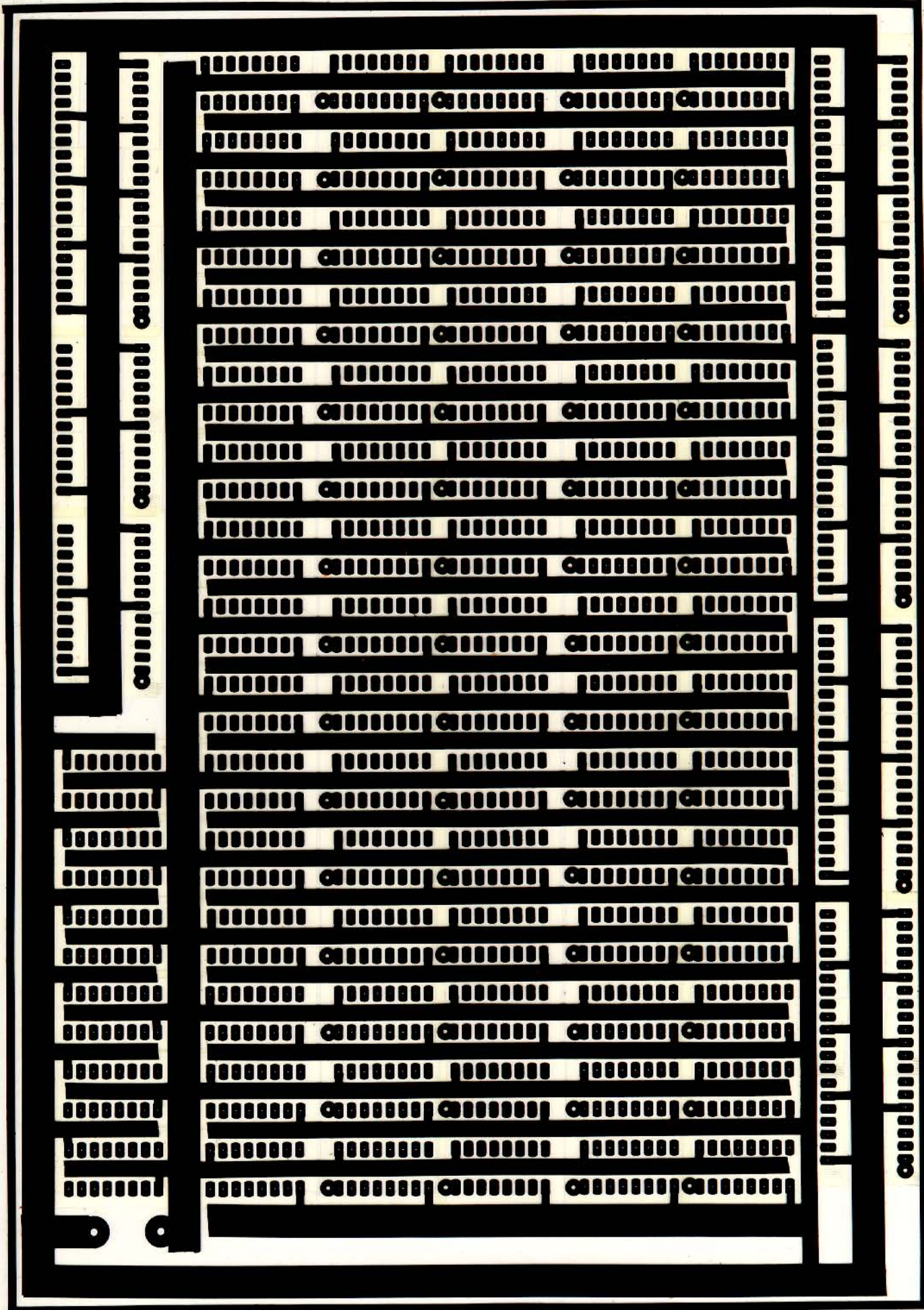
11111111 11111111 11111111 11111111 11111111

00000000 00000000 00000000 00000000 00000000

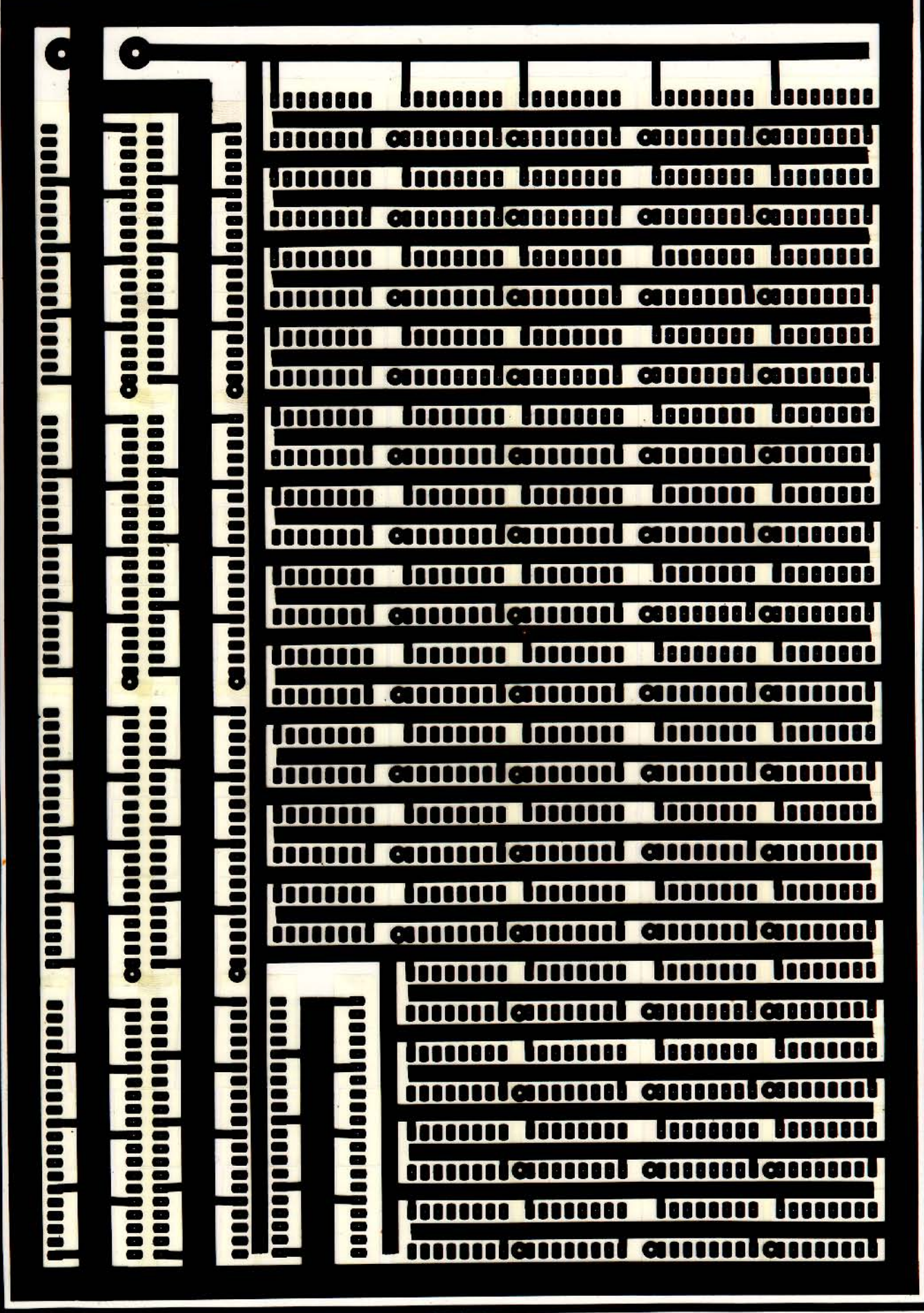
110 110 110 0 0 011 011 011 011 011 011

110 110 110 0 0 011 011 011 011 011 011





20 Central B's Report 10/10/10
Top 6 Bottom
Pentone
20 June 70
1980



Bus Detachment / AD, ADx, D, I Augustines
Mar 07 Port
Top 6 Gullies
P. 101
20 Jan 76
ABG

Vertical text on the left side of the page, possibly a page number or reference code, oriented vertically.

Main body of the document containing dense, repetitive text, likely a list or index of items, organized into columns and rows.

32 Box CPU Board
Bo (bond) System
Positive
19 June 76
AKS

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

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

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

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

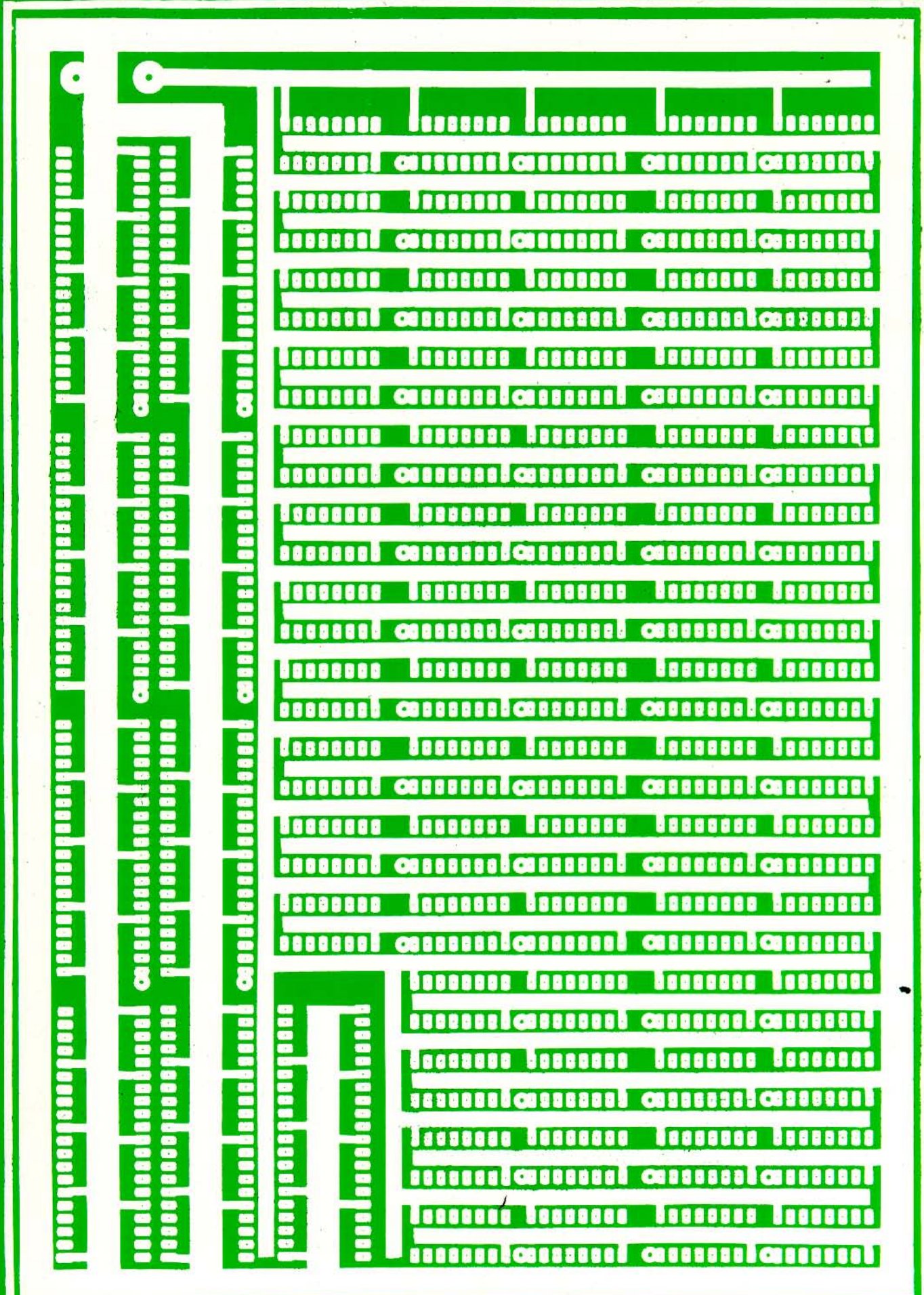
CAJIS / PSW / SR / CP number / or card Serial
17 June 76
Top 6 Bottom
ADD
Positive

Handwritten text in a vertical column on the left side of the page, likely a title or header.

Handwritten text in a vertical column on the left side of the page, likely a title or header.

Main body of handwritten text, organized into several columns and rows, possibly representing a list or a structured document.

Handwritten text in a vertical column on the right side of the page, likely a title or header.

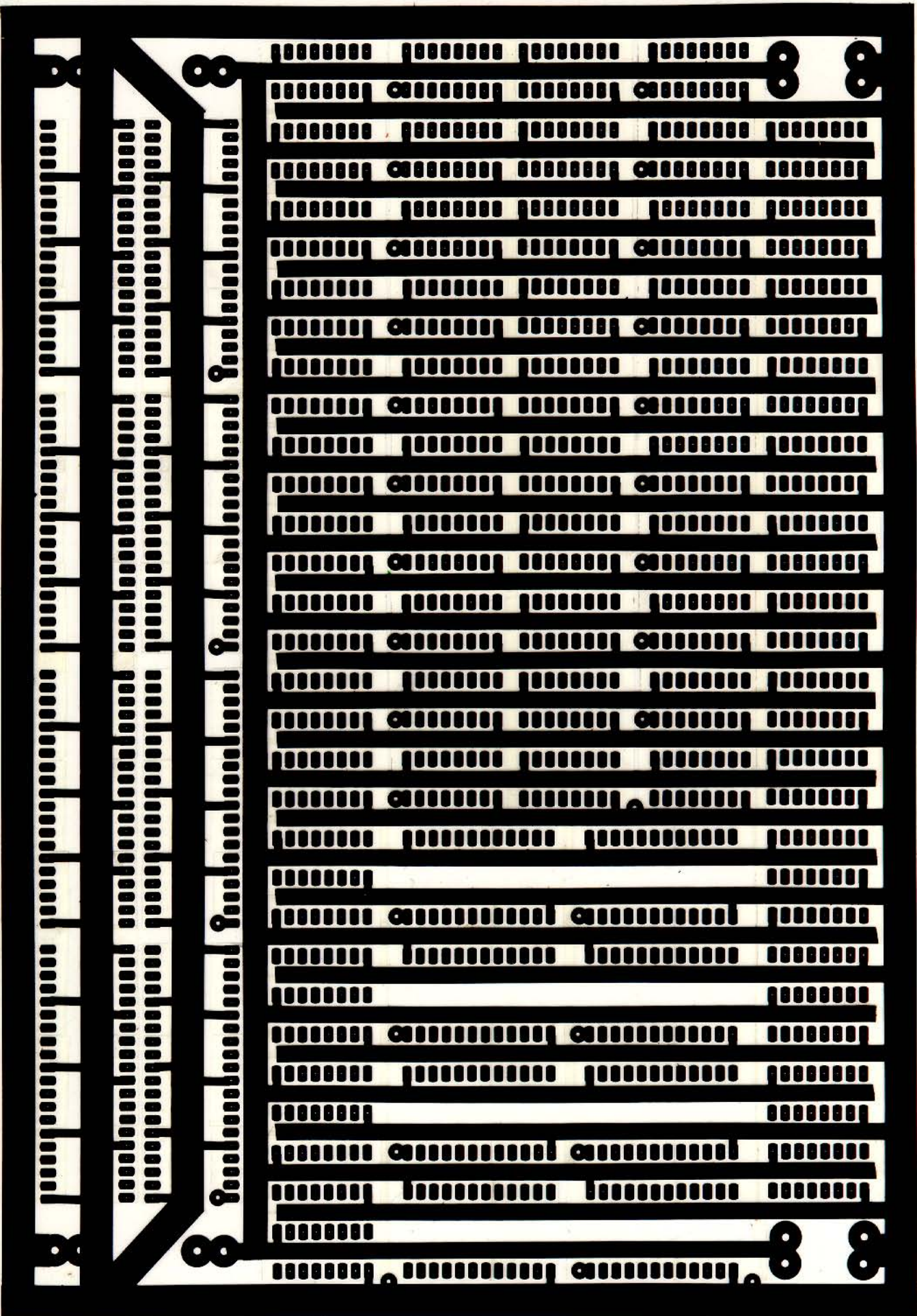


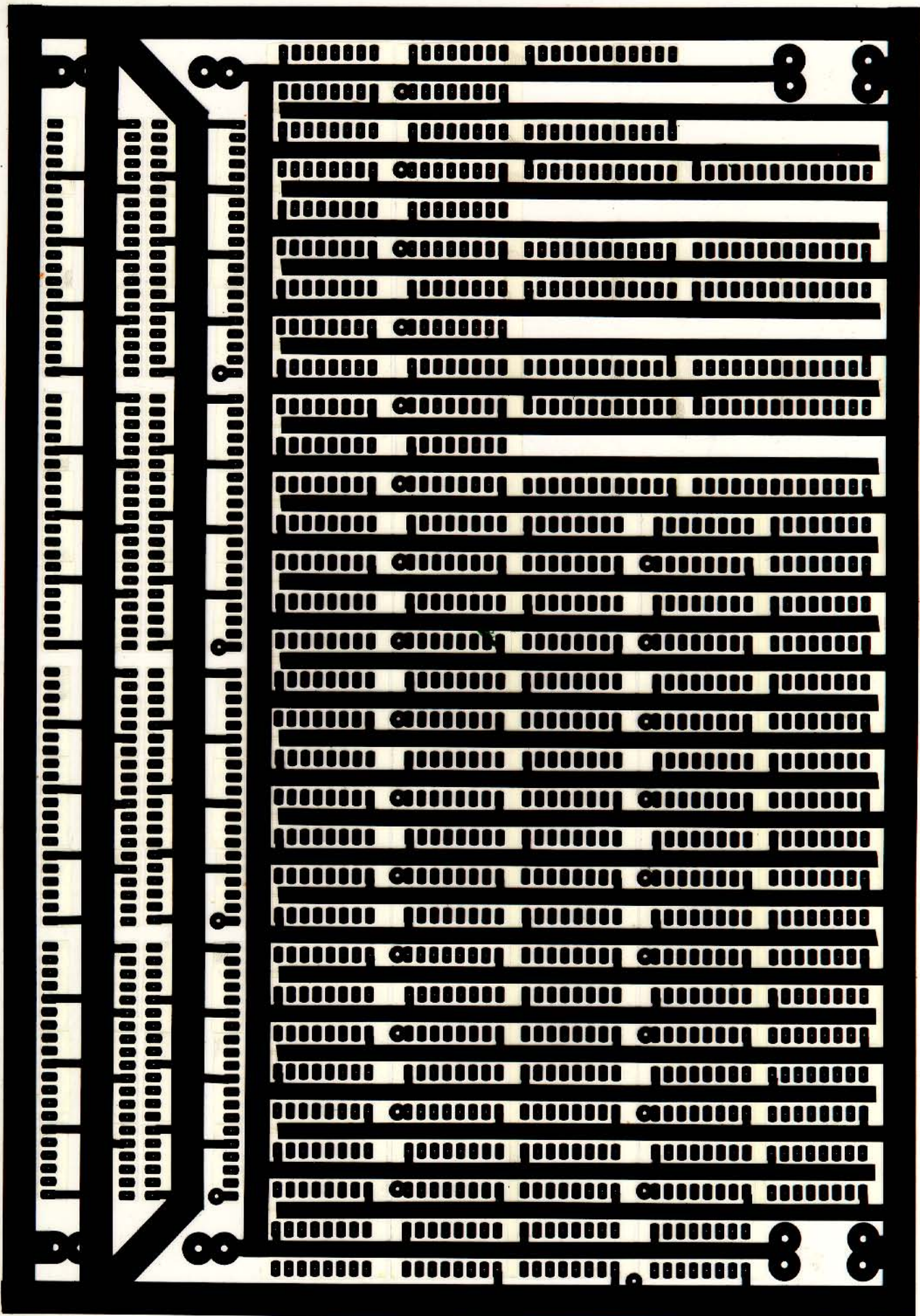
Handwritten text in a vertical column on the left side of the page, likely a page number or header.

Handwritten text in a vertical column on the left side of the page, likely a page number or header.

Main body of handwritten text, organized into approximately 15 horizontal lines. Each line contains several columns of text, possibly representing a table or a list of entries.

Handwritten text at the bottom of the page, possibly a footer or a concluding note.





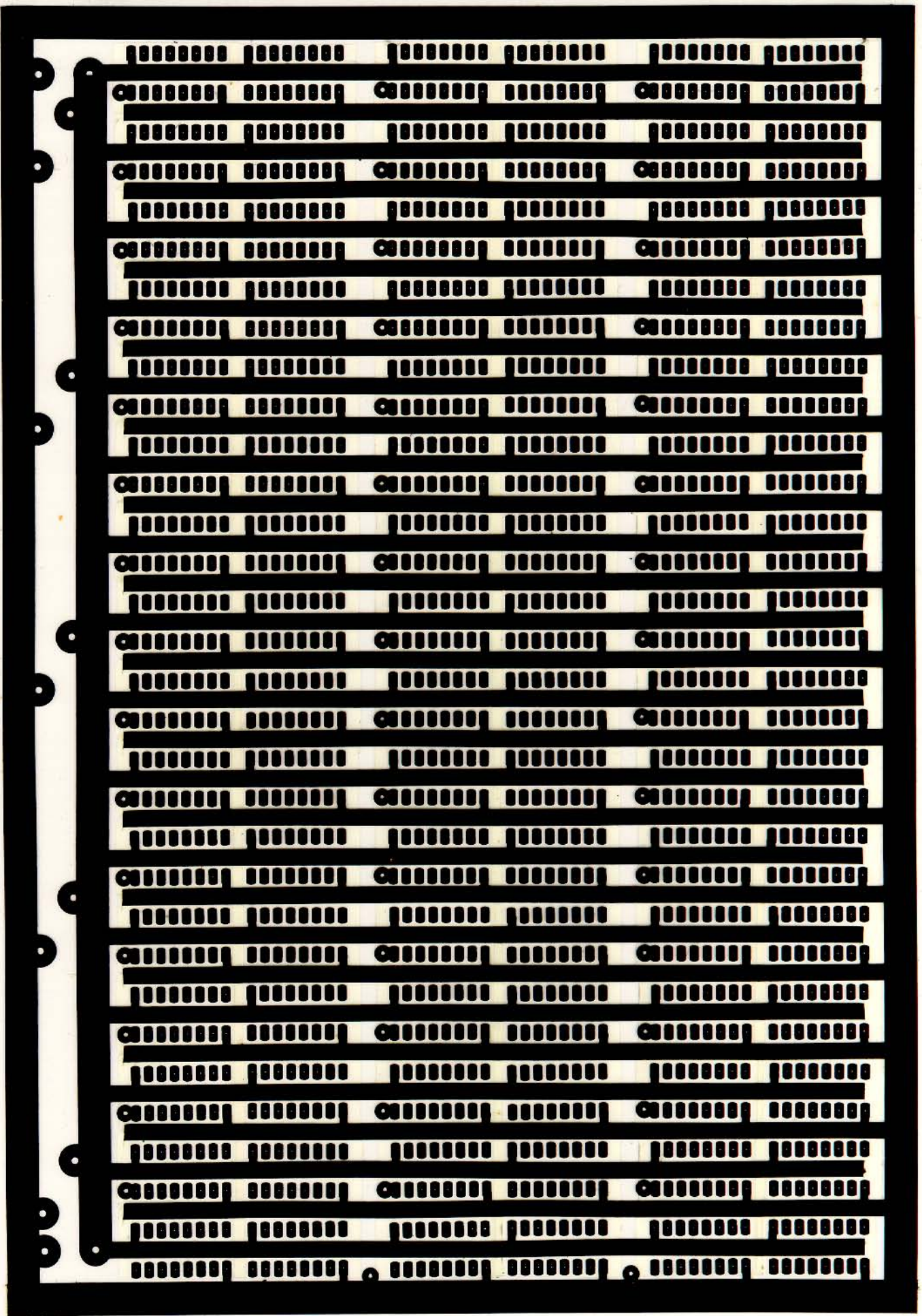


Handwritten text in a vertical column on the left side of the page, likely a title or header.



Handwritten text in a vertical column on the left side of the main text block, likely a title or header.

Main body of handwritten text, organized into several paragraphs. The text is written in a cursive script and is contained within a decorative border.



Handwritten text in a highly stylized, repetitive script, possibly a form of shorthand or a specific dialect. The text is organized into approximately 20 horizontal lines, each containing several groups of characters. The script is dense and uniform in appearance, suggesting a highly structured or formulaic language. The characters are small and closely spaced, with some larger characters that may serve as markers or separators. The overall layout is neat and consistent, typical of a formal document or a specific type of record-keeping.

Vertical columns of mirrored, repeating text characters on the left side of the page.

Main body of mirrored, repeating text characters arranged in horizontal lines across the center of the page.



Handwritten text in a cursive script, organized into approximately 12 horizontal lines. The text is densely packed and appears to be a list or a series of entries.

Vertical handwritten text on the left side of the page, organized into three distinct columns. The text is written in the same cursive script as the main body.

Handwritten text in a cursive script, organized into approximately 12 horizontal lines, located in the lower right section of the page. The text is densely packed and appears to be a list or a series of entries.

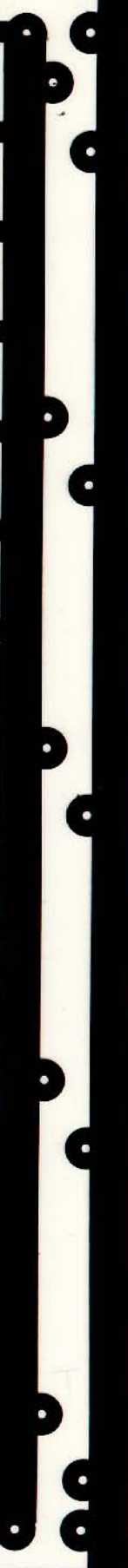
Handwritten text in a highly stylized, repetitive script, possibly a form or ledger. The text is arranged in approximately 25 horizontal rows, each containing several columns of characters. The script is dense and uniform, suggesting a systematic or templated writing style. The page is framed by a white border with circular punch holes on the left side.

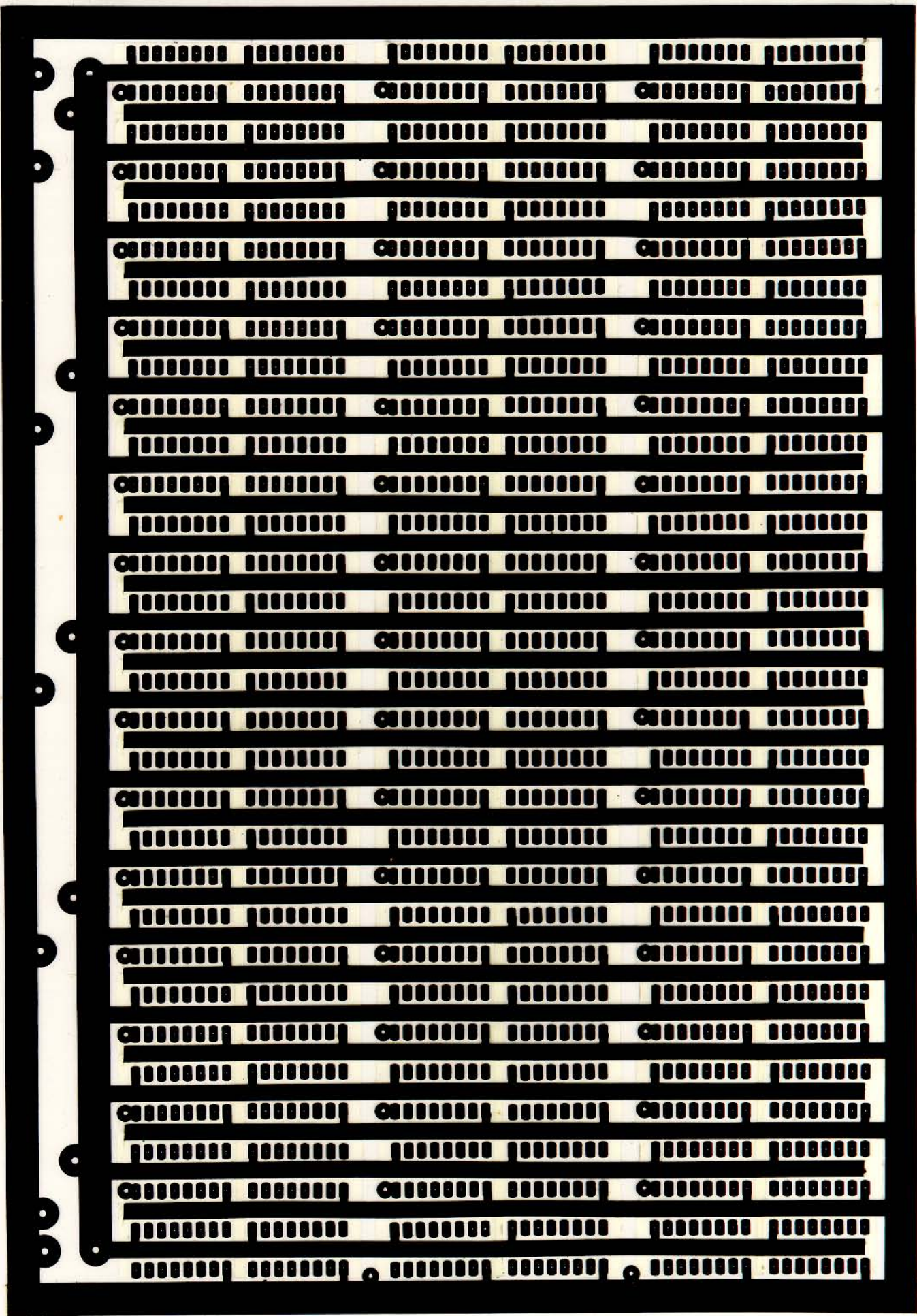
Handwritten text in a cursive script, organized into approximately 20 horizontal lines. The text is written in dark ink on a light-colored background. The script is dense and appears to be a form of shorthand or a specific dialect. The lines are separated by thin horizontal lines, and the overall layout is neat and structured. The text is contained within a rectangular border.

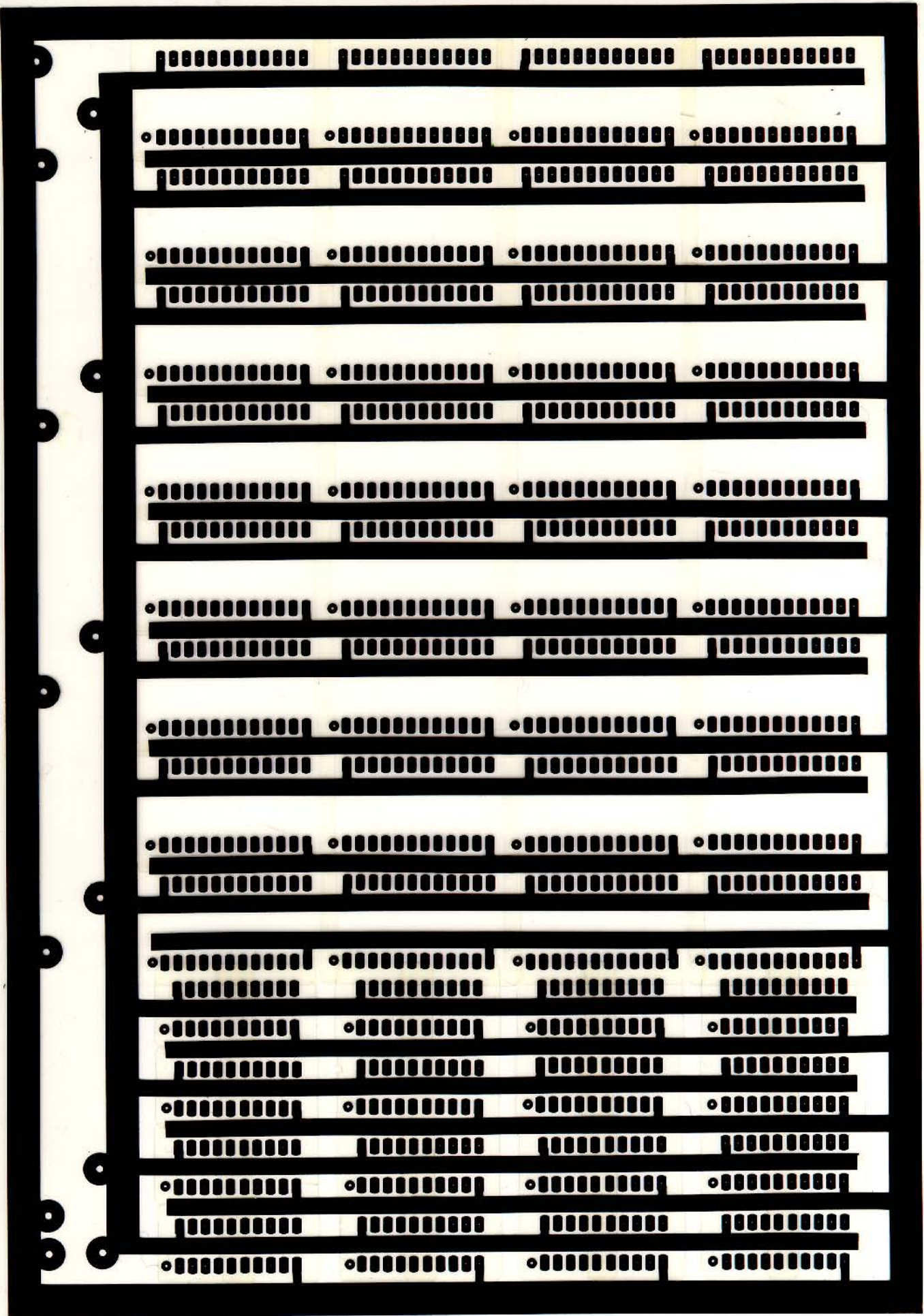
Handwritten text in a cursive script, organized into approximately 15 horizontal lines. The text is dense and fills most of the page's width.

Vertical text or a list of items, organized into four distinct columns. Each column contains a series of short, vertically aligned entries, possibly names or dates, separated by a central vertical line.

Handwritten text in a cursive script, organized into approximately 15 horizontal lines. This section continues the text from the top of the page, with similar density and style.







ARS-Processor Microcode Replacement Board

Handwritten text in a cursive script, organized into approximately 12 horizontal lines. The text is densely packed and appears to be a list or a series of entries.

Vertical handwritten text on the left side of the page, organized into three distinct columns. The text is written in the same cursive script as the main body.

Handwritten text in a cursive script, organized into approximately 12 horizontal lines, located in the lower right section of the page. The text is densely packed and appears to be a list or a series of entries.



Vertical text columns on the left side of the page, consisting of multiple columns of characters.

Main body of vertical text columns, containing the majority of the page's content.



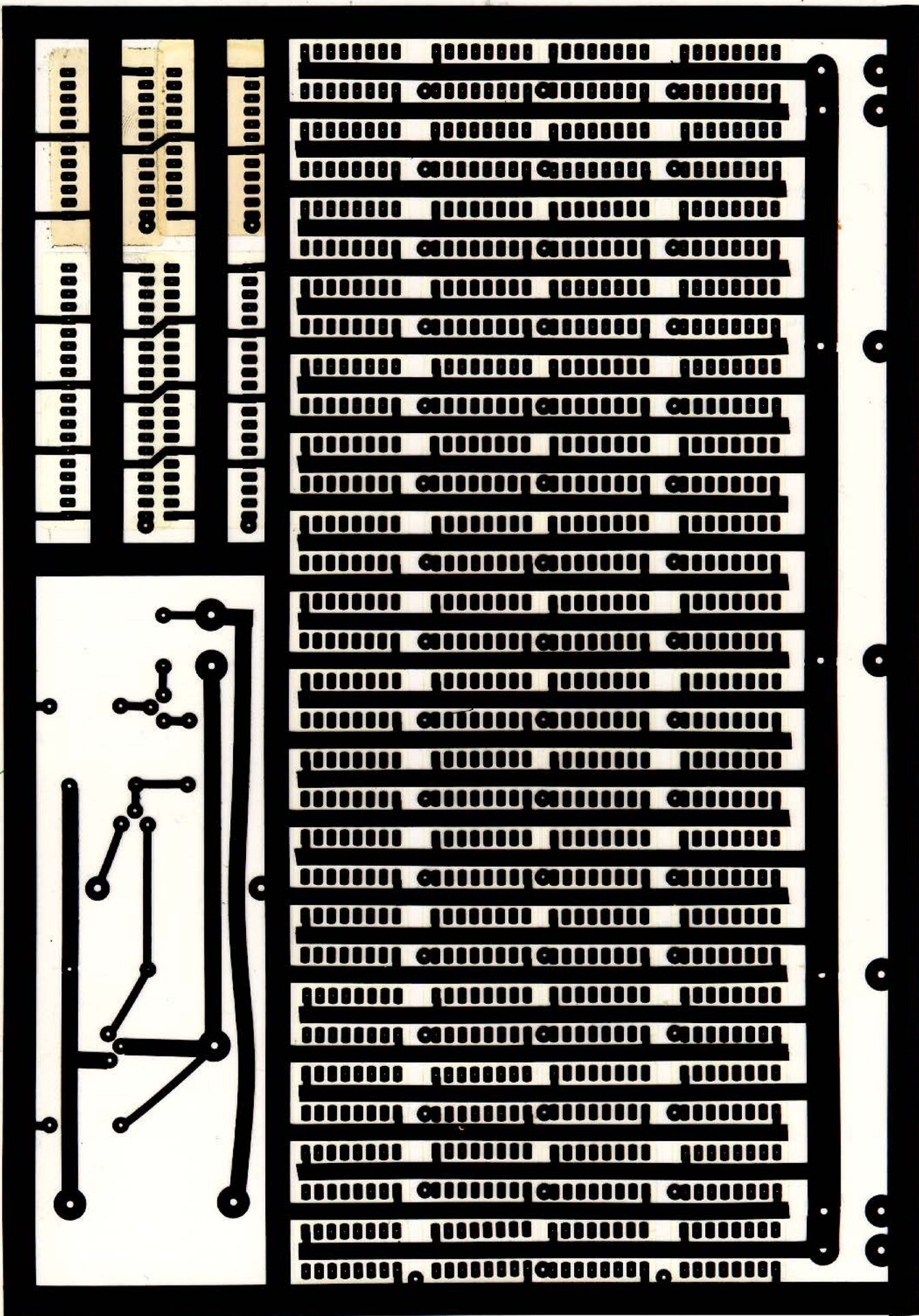
Handwritten text in a highly stylized, repetitive script, possibly a form of shorthand or a specific dialect. The text is organized into approximately 20 horizontal lines, each containing several groups of characters. The script is dense and uniform in appearance, suggesting a highly structured or formulaic language. The characters are small and closely spaced, with some larger characters that may serve as markers or separators. The overall layout is clean and organized, with a clear left margin and a consistent line structure.

Handwritten text in a cursive script, organized into approximately 12 horizontal lines. The text is densely packed and appears to be a list or a series of entries.

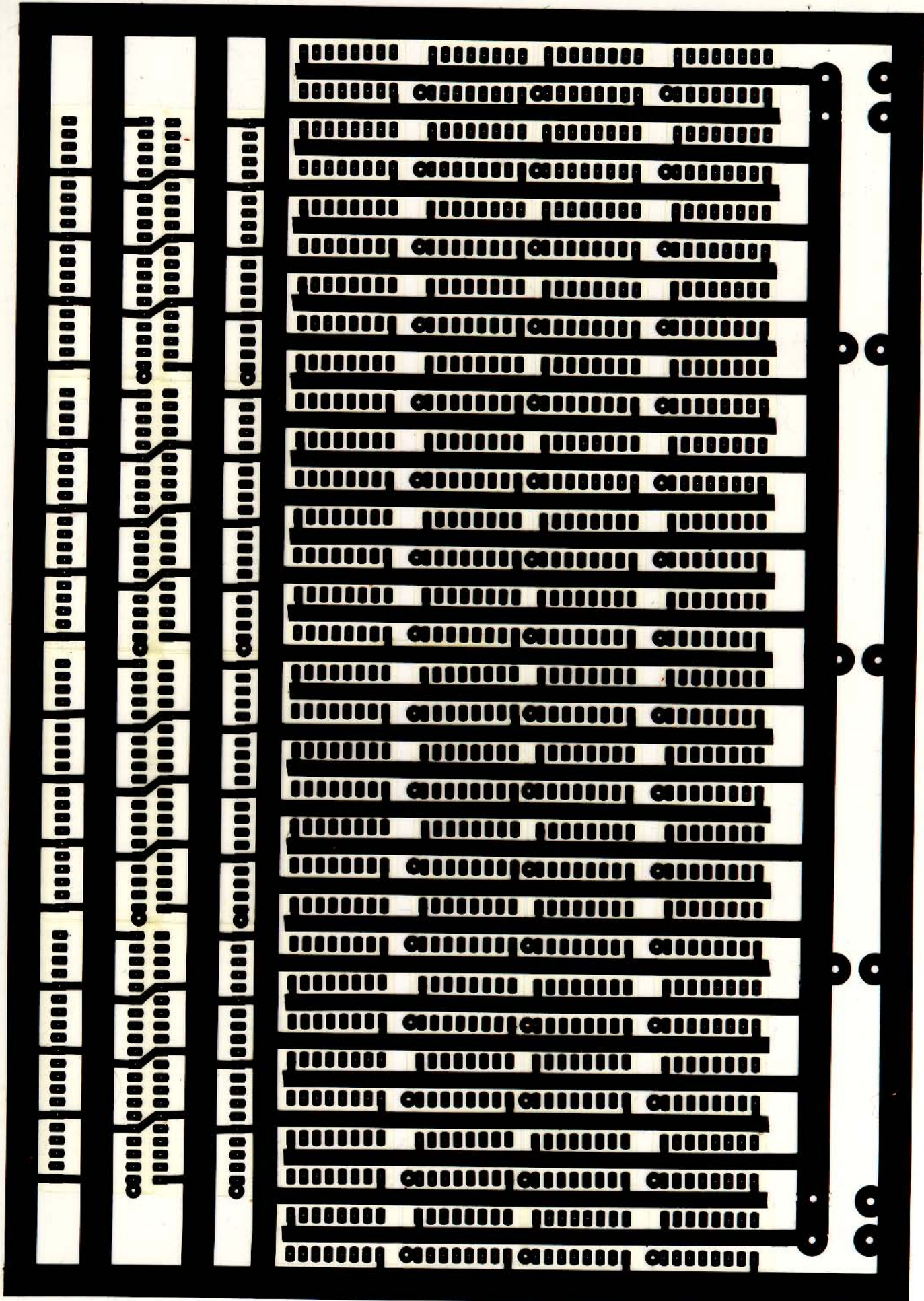
Vertical handwritten text on the left side of the page, consisting of three distinct columns of entries. The text is written in the same cursive script as the main body.

Handwritten text in a cursive script, organized into approximately 12 horizontal lines, located in the lower right section of the page. The text is densely packed and appears to be a list or a series of entries.

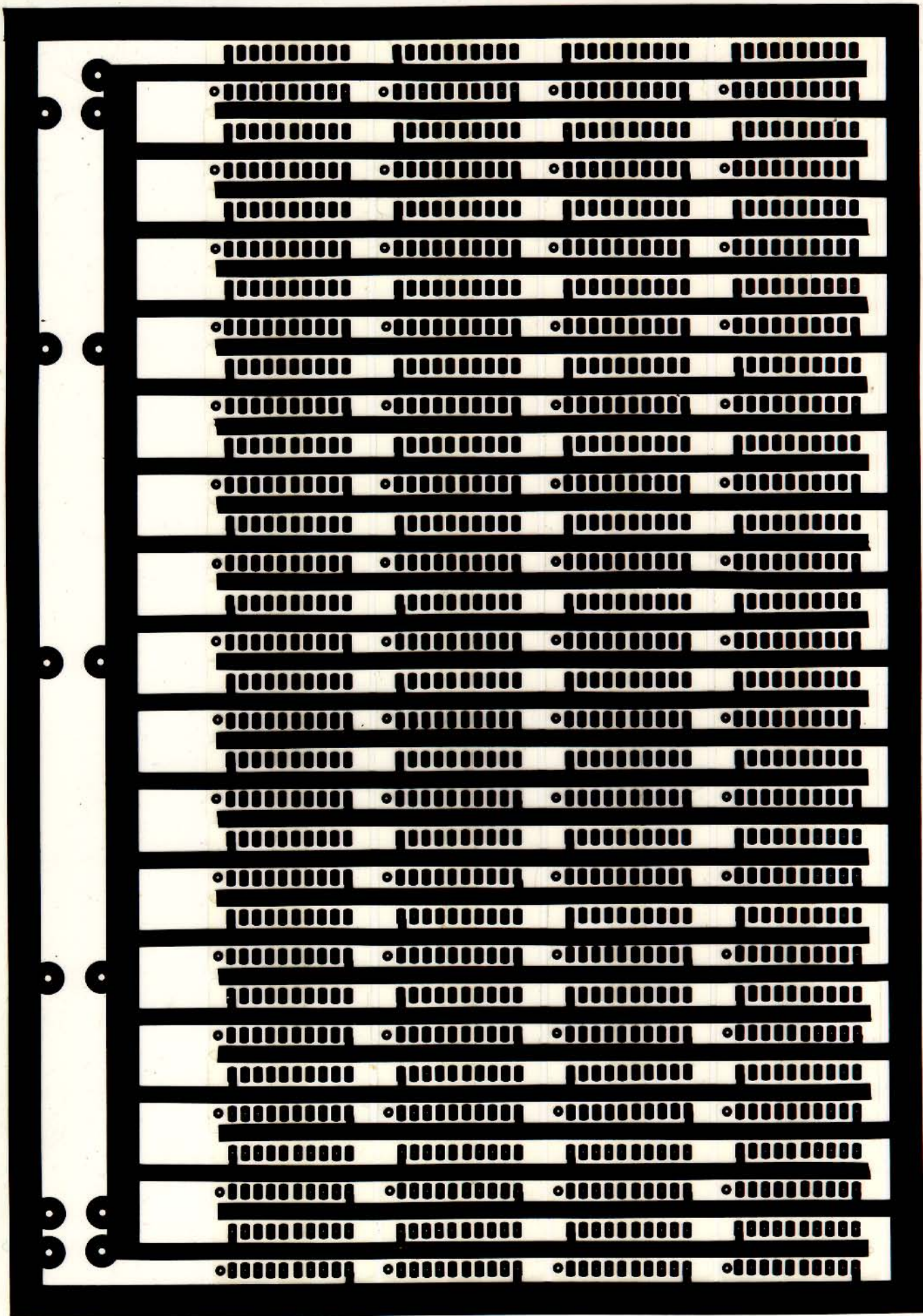
Handwritten text in a cursive script, organized into approximately 20 horizontal lines. The text is written in dark ink on a light-colored background. The script is dense and appears to be a form of shorthand or a specific dialect. The lines are separated by thin horizontal lines, and the overall layout is neat and organized. The text is contained within a rectangular border.



Handwritten text on a yellow rectangular sticker, possibly a label or identification mark. The text is faint and difficult to read, but appears to be a name or a number.



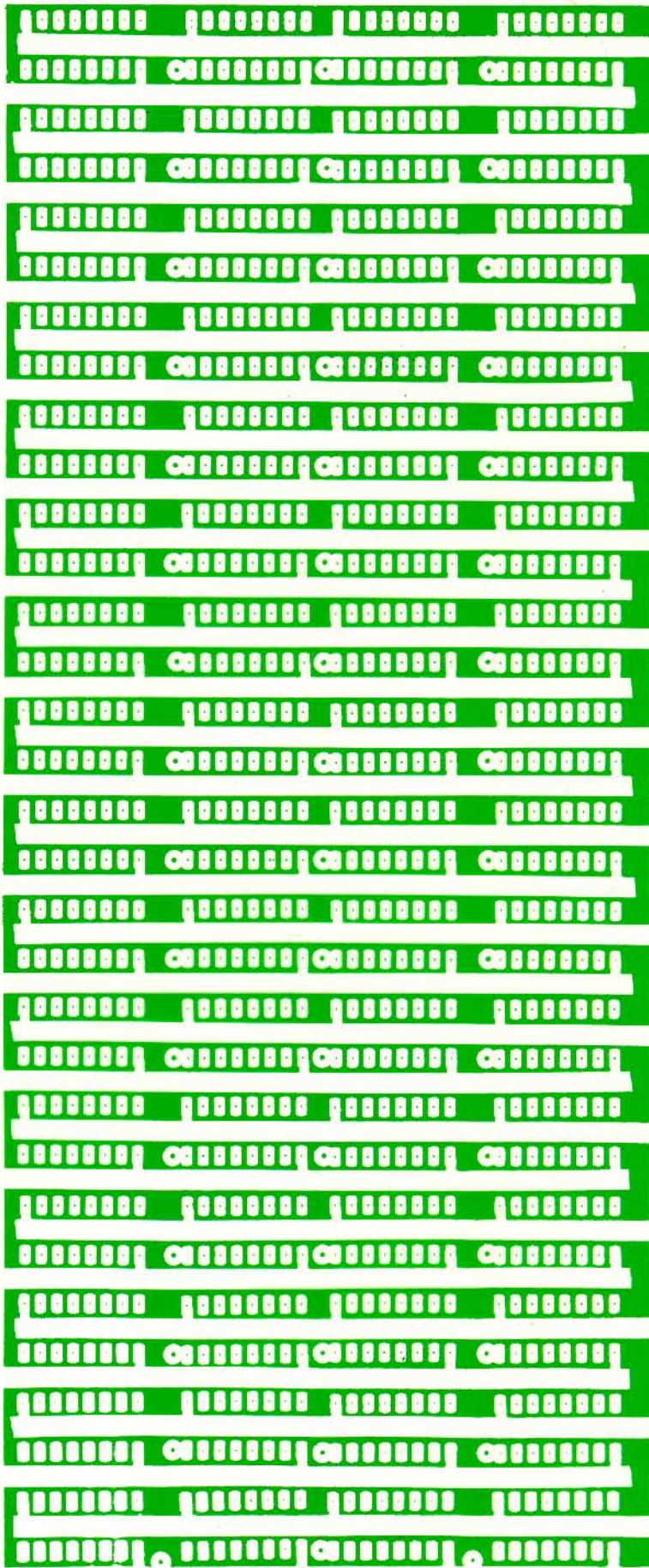
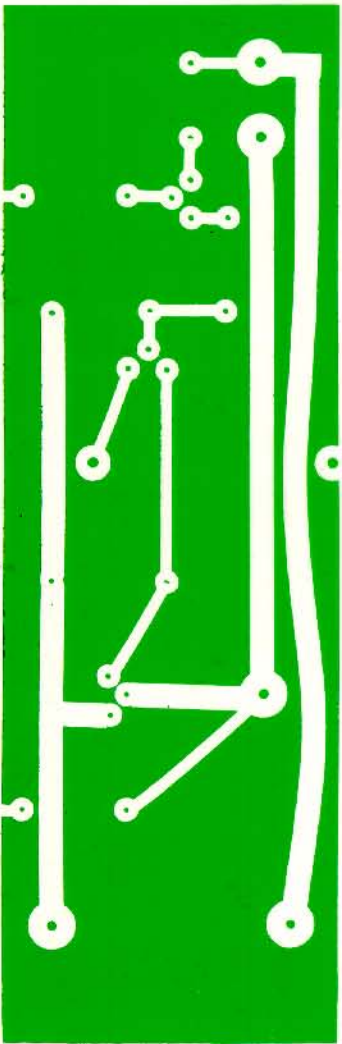
PROPERTY MAP

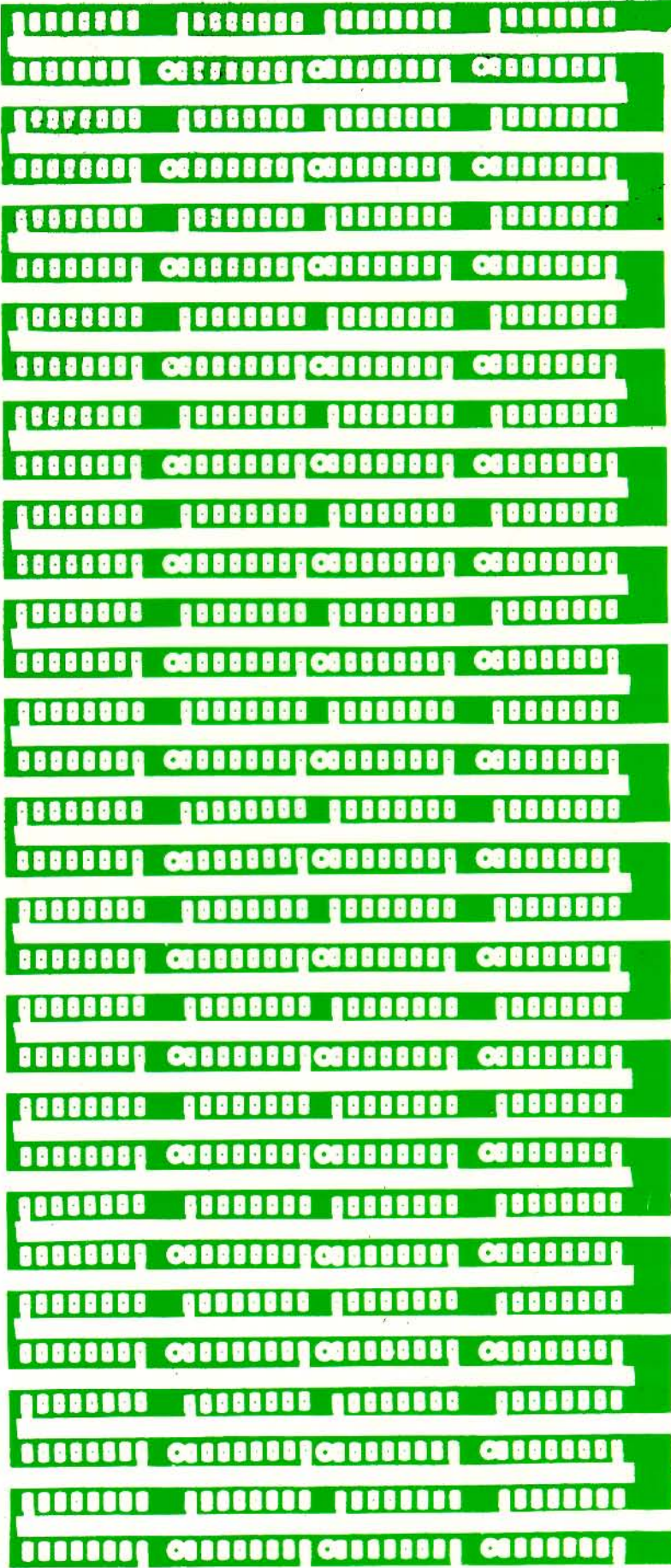
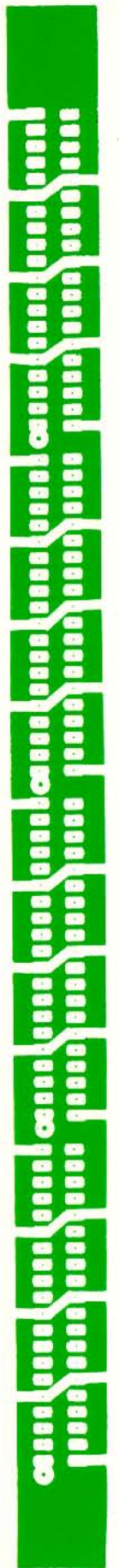
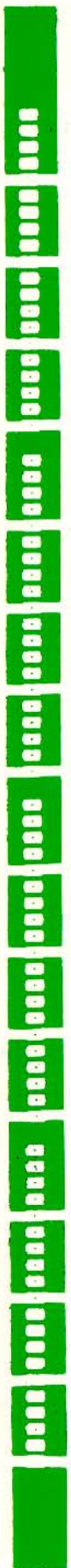


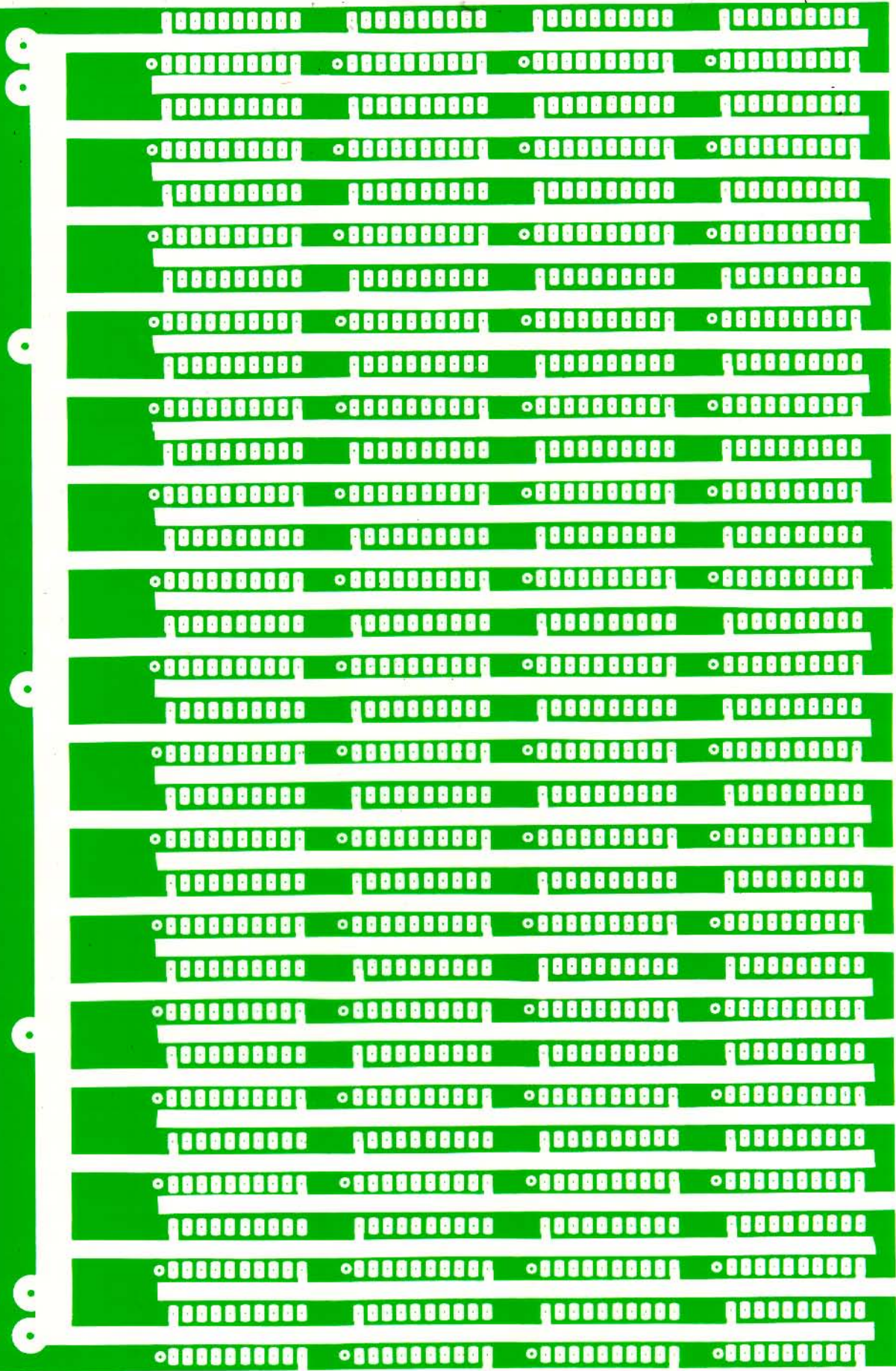
64Kw FAST Memory Replicator MM 6T Panel

Handwritten text in a highly stylized, repetitive font, possibly a form or ledger. The text is organized into columns and rows, with some characters resembling '0', '1', and '2'. The overall appearance is that of a dense, structured data entry or a specific type of shorthand.

Handwritten note on a yellow sticky note: *10/16/1964*







Handwritten text in a cursive script, likely a historical document or manuscript. The text is arranged in approximately 25 horizontal lines, with some lines containing multiple columns of writing. The script is dense and characteristic of early modern European handwriting. The document is framed by a decorative border consisting of repeating circular motifs on the left and right sides.

Handwritten text in a highly stylized, repetitive script, possibly a form of shorthand or a specific dialect. The text is organized into approximately 20 horizontal lines, each containing several groups of characters. The script is dense and uniform in appearance, suggesting a highly structured or formulaic language. The characters are small and closely spaced, with some larger characters that may serve as markers or punctuation. The overall layout is clean and organized, with a clear separation between lines of text.

Handwritten text in a cursive script, organized into approximately 12 horizontal lines. The text is densely packed and appears to be a list or a series of entries.

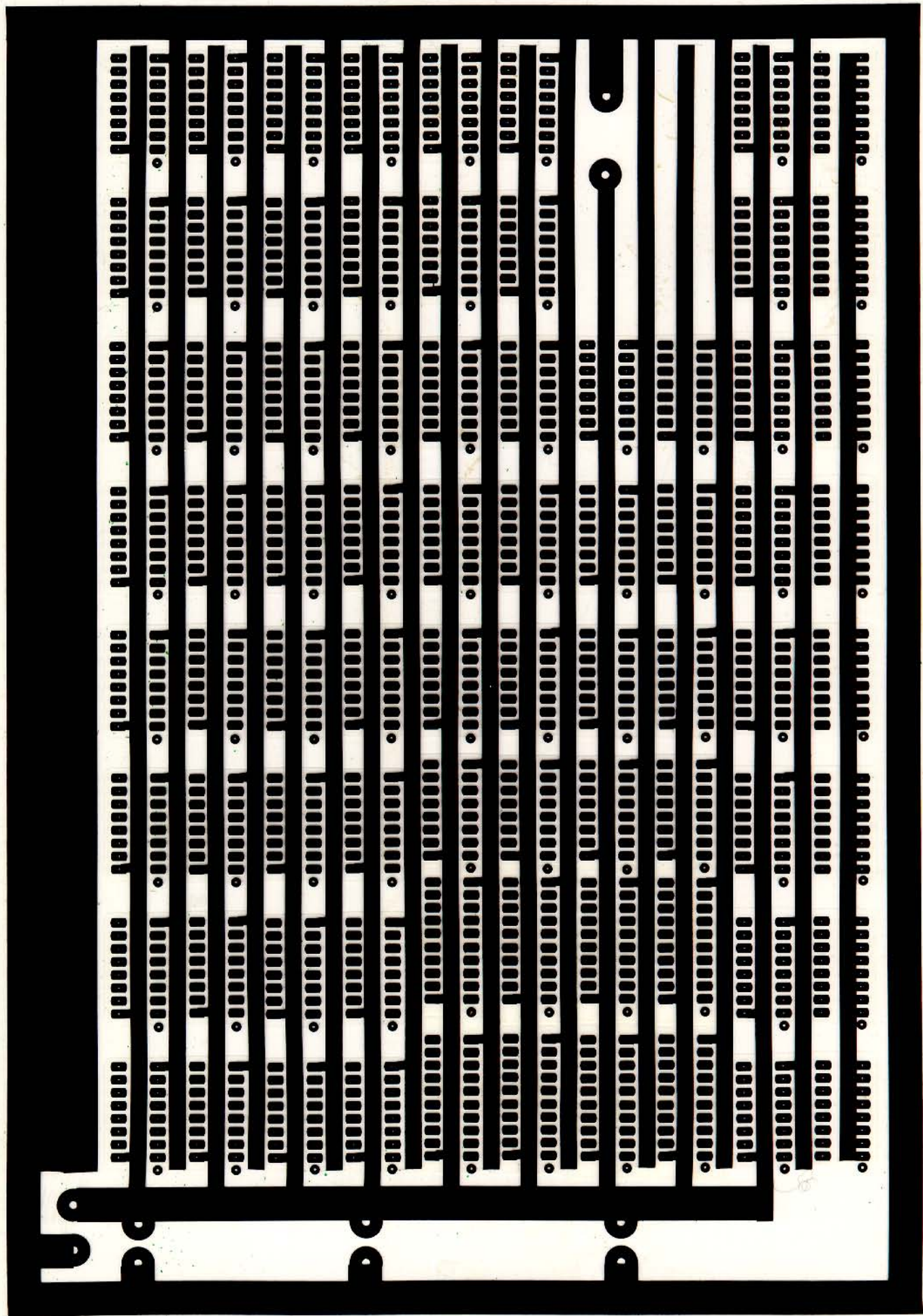
Vertical handwritten text on the left side of the page, organized into three distinct columns. The text is written in the same cursive script as the main body.

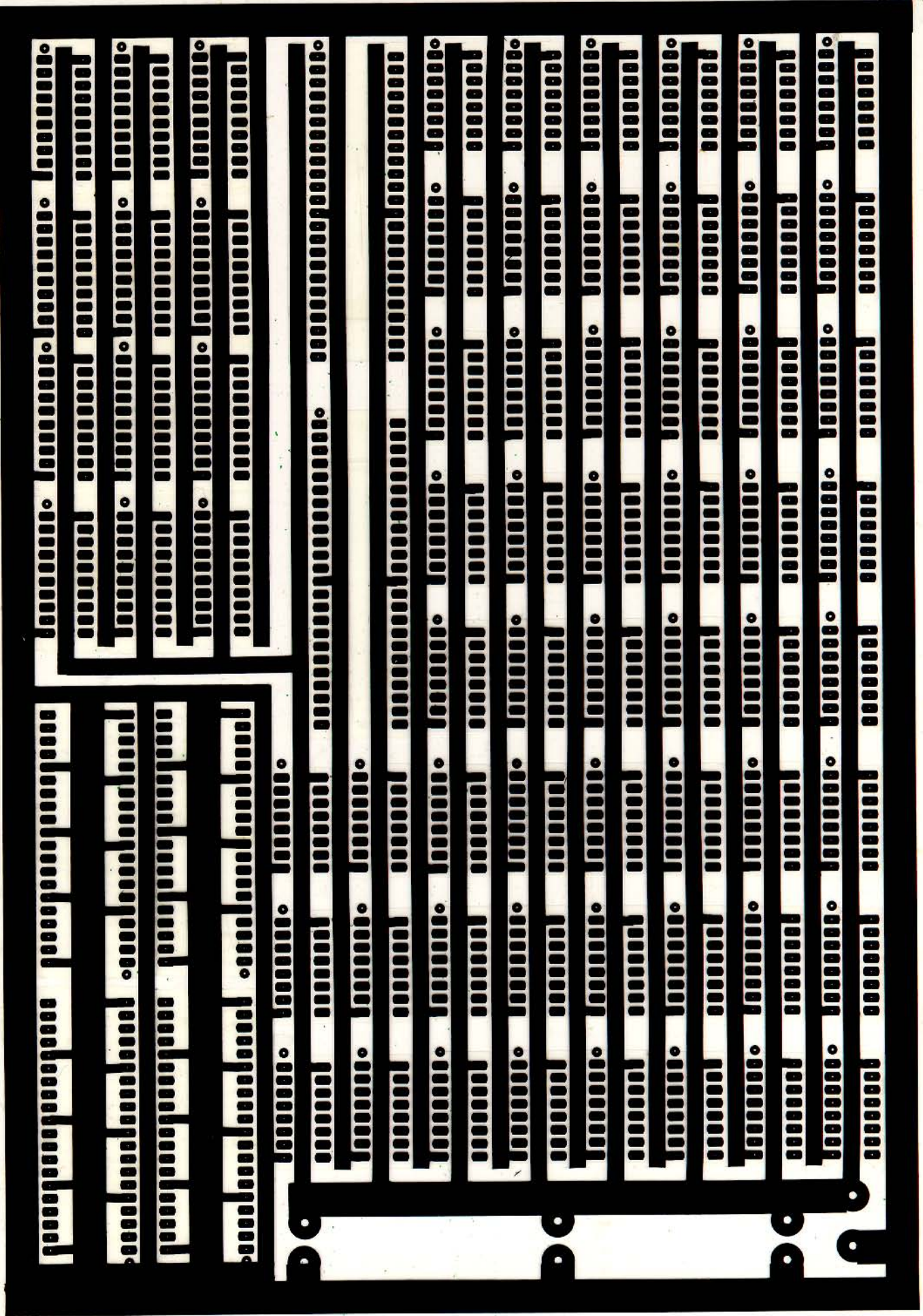
Handwritten text in a cursive script, organized into approximately 12 horizontal lines, located in the lower right section of the page. The text is densely packed and appears to be a list or a series of entries.

Handwritten text in a cursive script, organized into approximately 20 horizontal lines. The text is written in dark ink on a light-colored background. The script is dense and appears to be a form of shorthand or a specific dialect. The lines are separated by thin horizontal lines, and the overall layout is rectangular. The text is contained within a white border that has several circular punch holes along the left edge.

Bottom/Left ASD
27-NOV-82

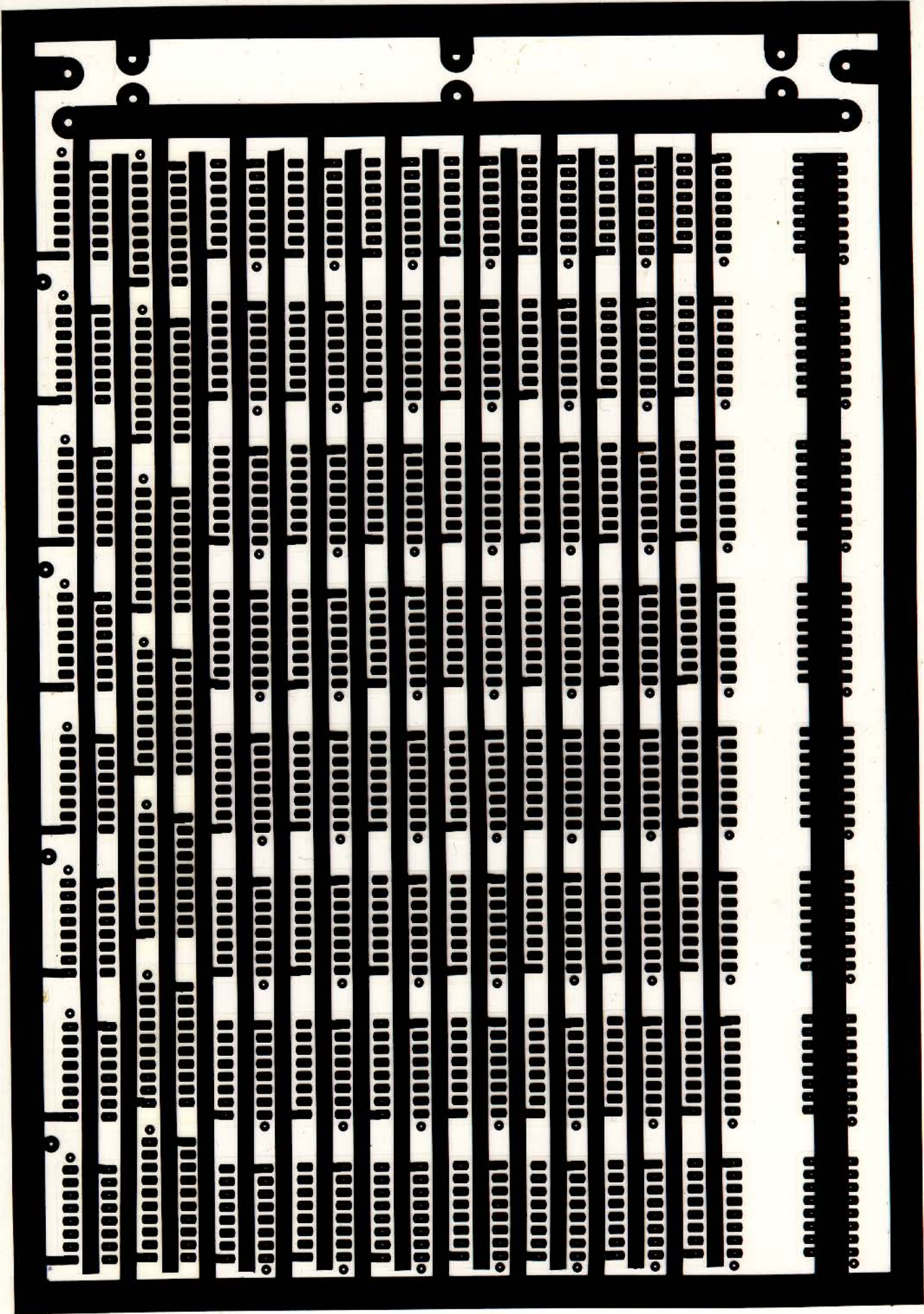
Memory Contact 1/2cc



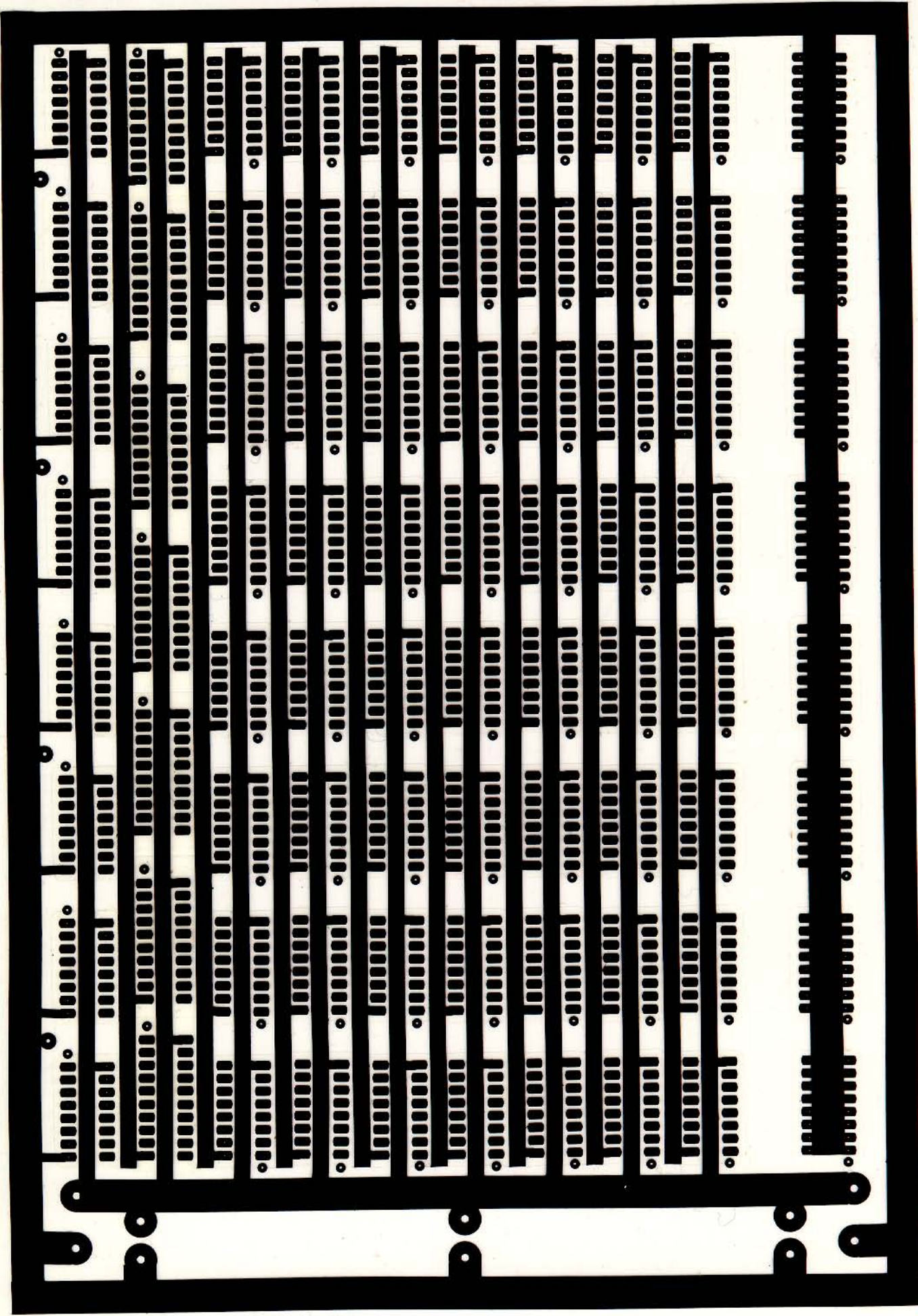


Memory Control/ECC

Top/Left 25-Mar 82 ARD



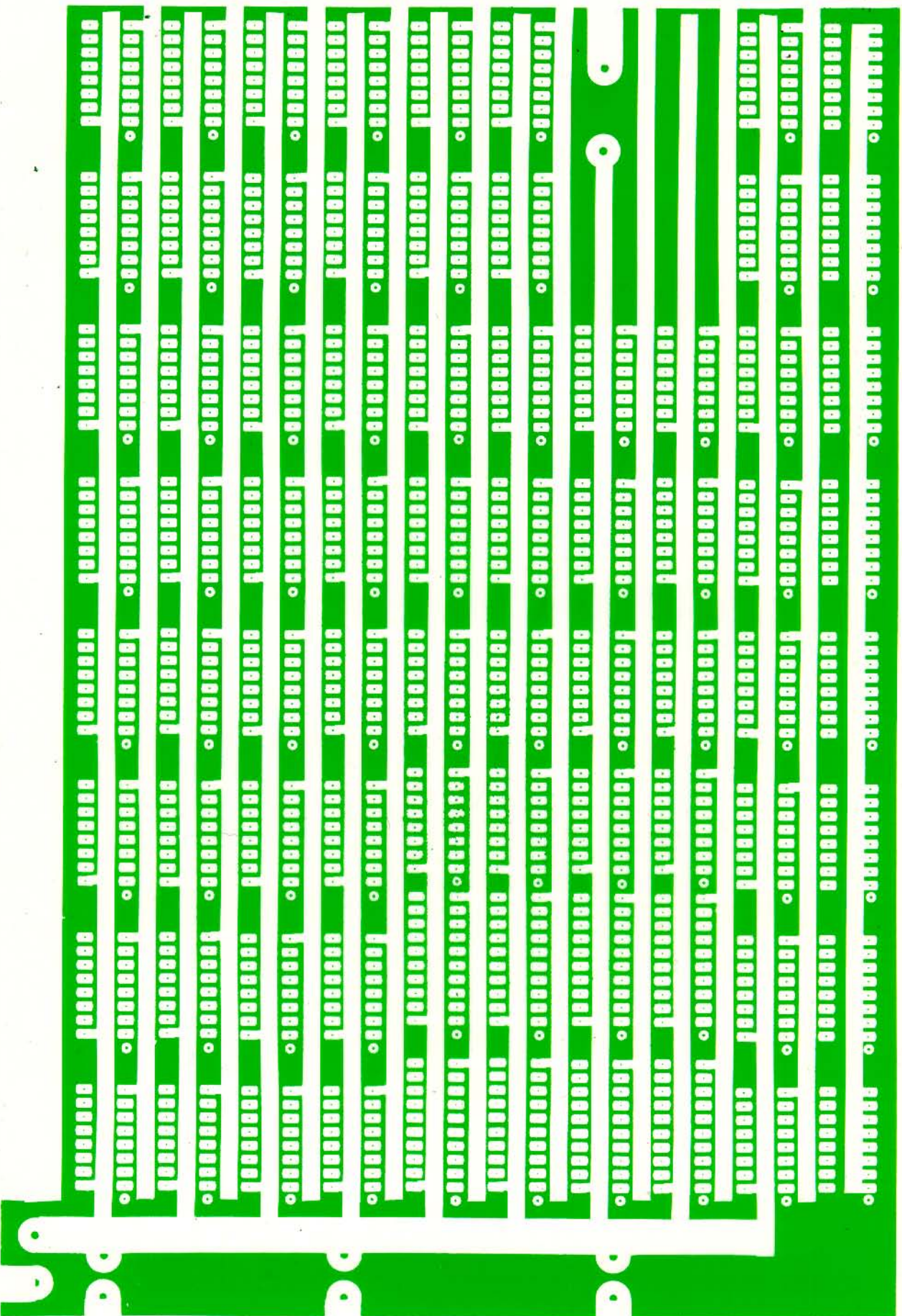
Memory Control/ECC Bottom/Right
25-Nov-82 ADP

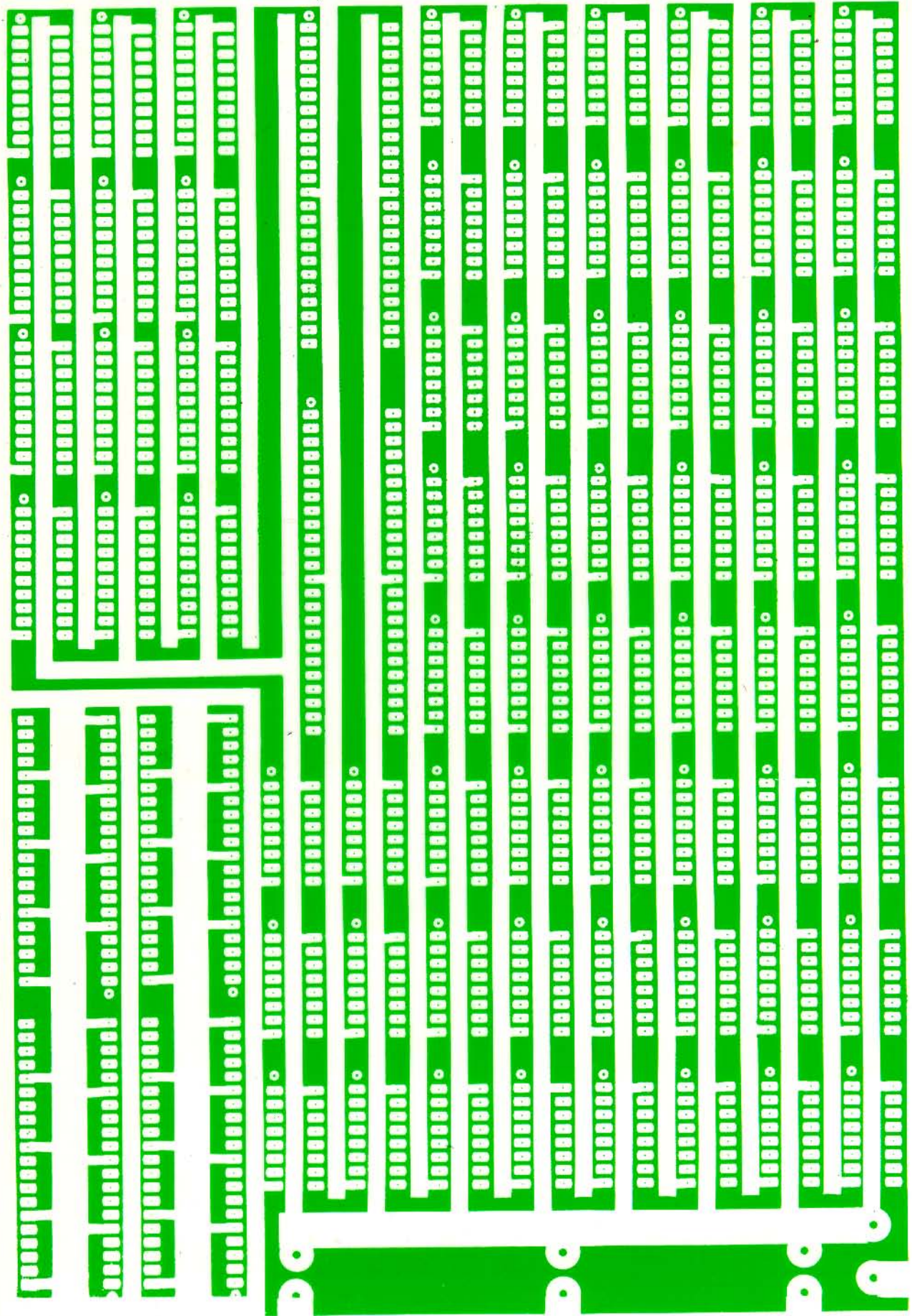


Memory Central/15cc

TOP/Right

25-Nov-82 ARD





.....

.....

.....

.....

.....

.....

.....

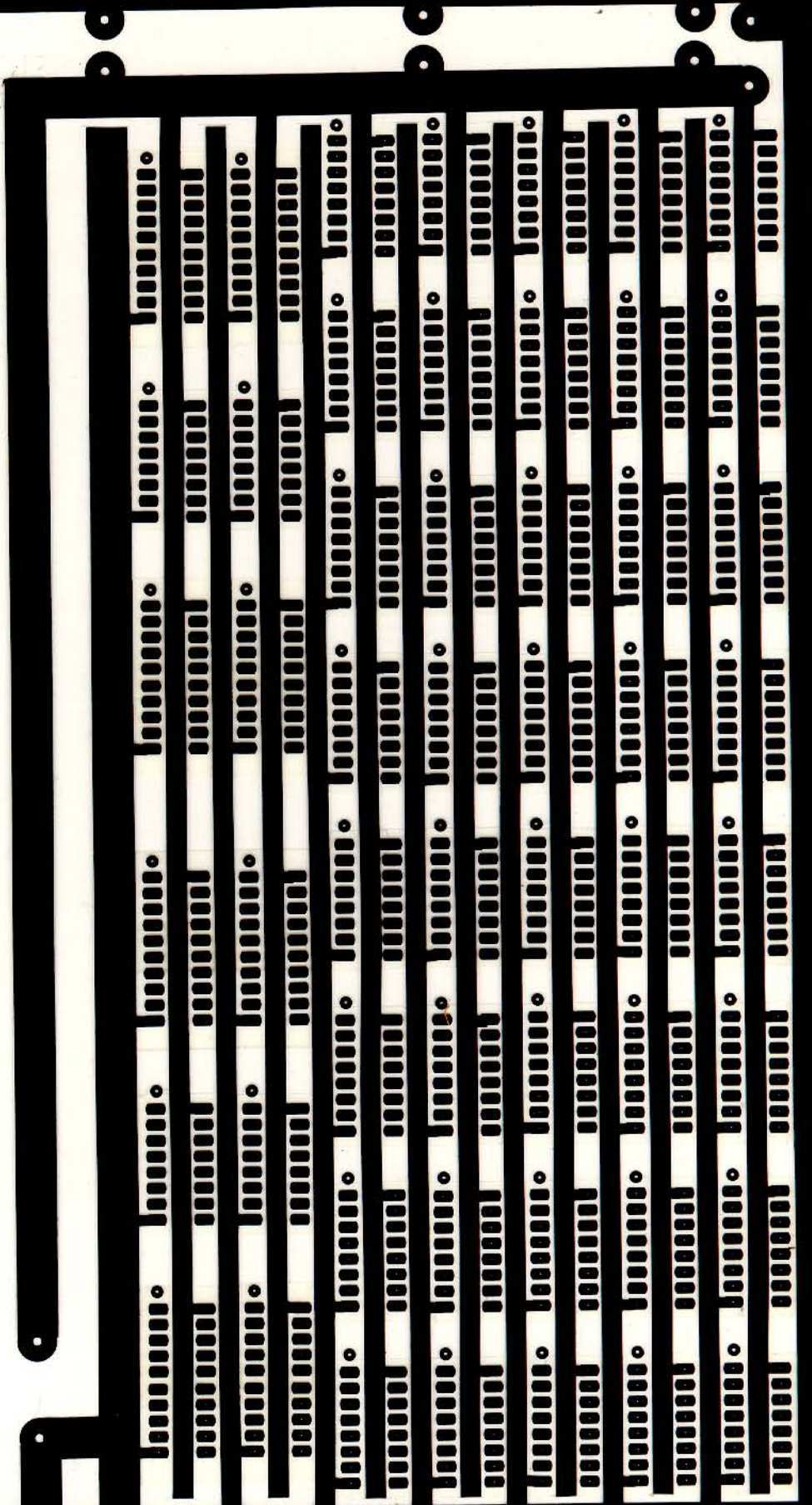
.....

.....

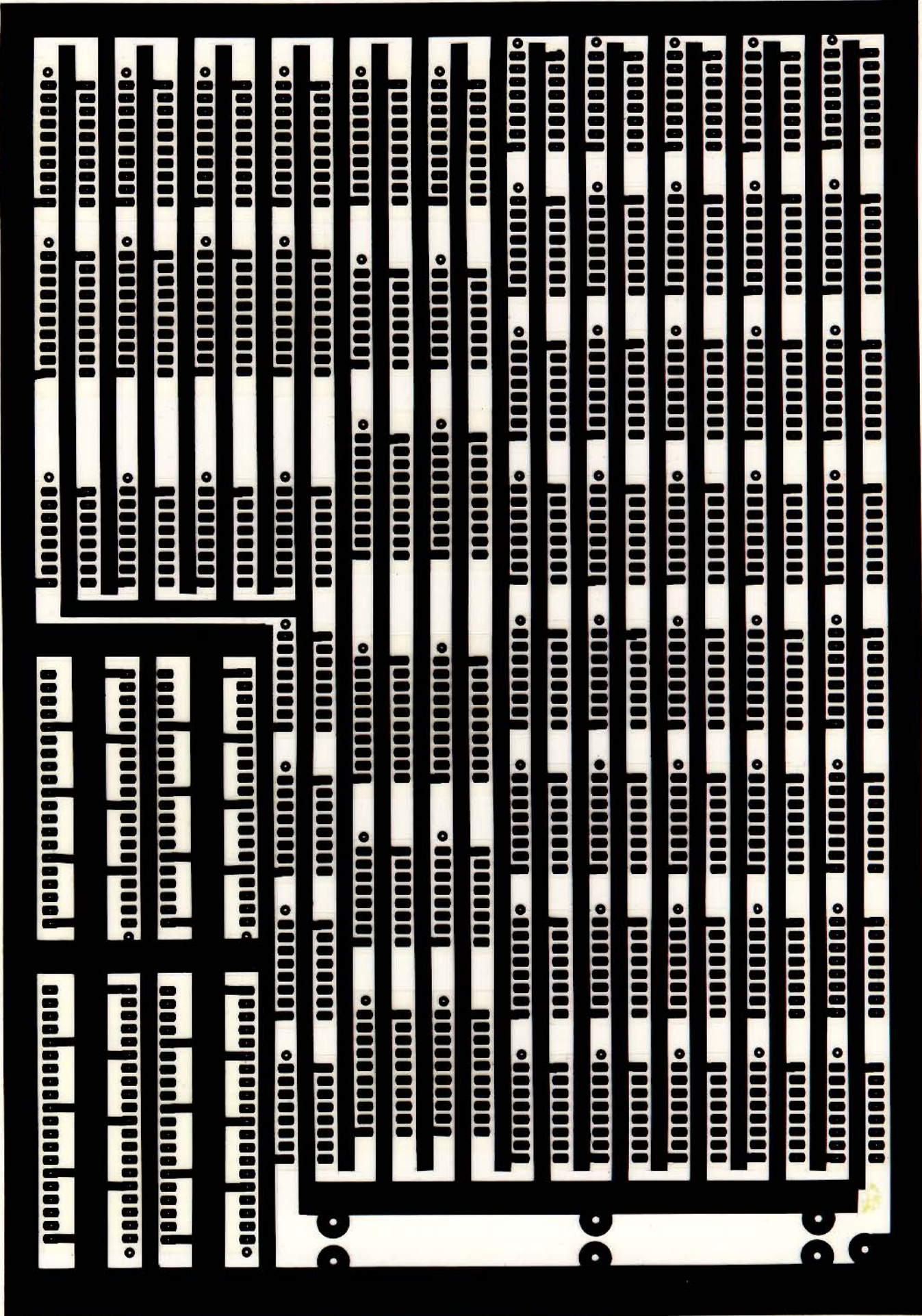
.....

.....

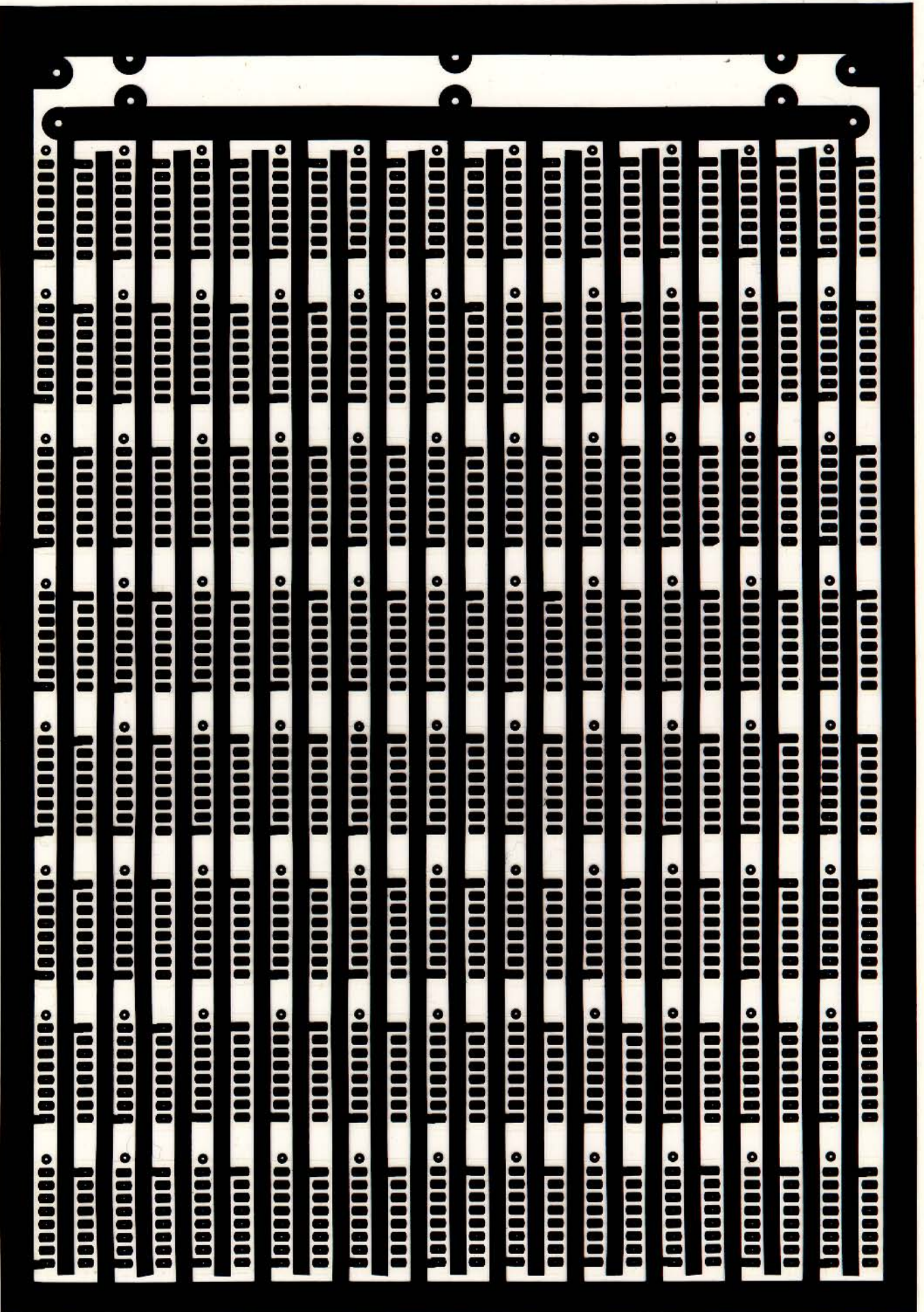
Handwritten text in a cursive script, likely a historical document or letter. The text is arranged in approximately 15 horizontal lines across the page. The ink is dark, and the paper shows signs of age and wear. The handwriting is dense and fills most of the page area. The lines of text are separated by small gaps, and the overall appearance is that of a continuous block of writing.



Bottom Left 2-Mix Board.
3 Sept 82 ARD

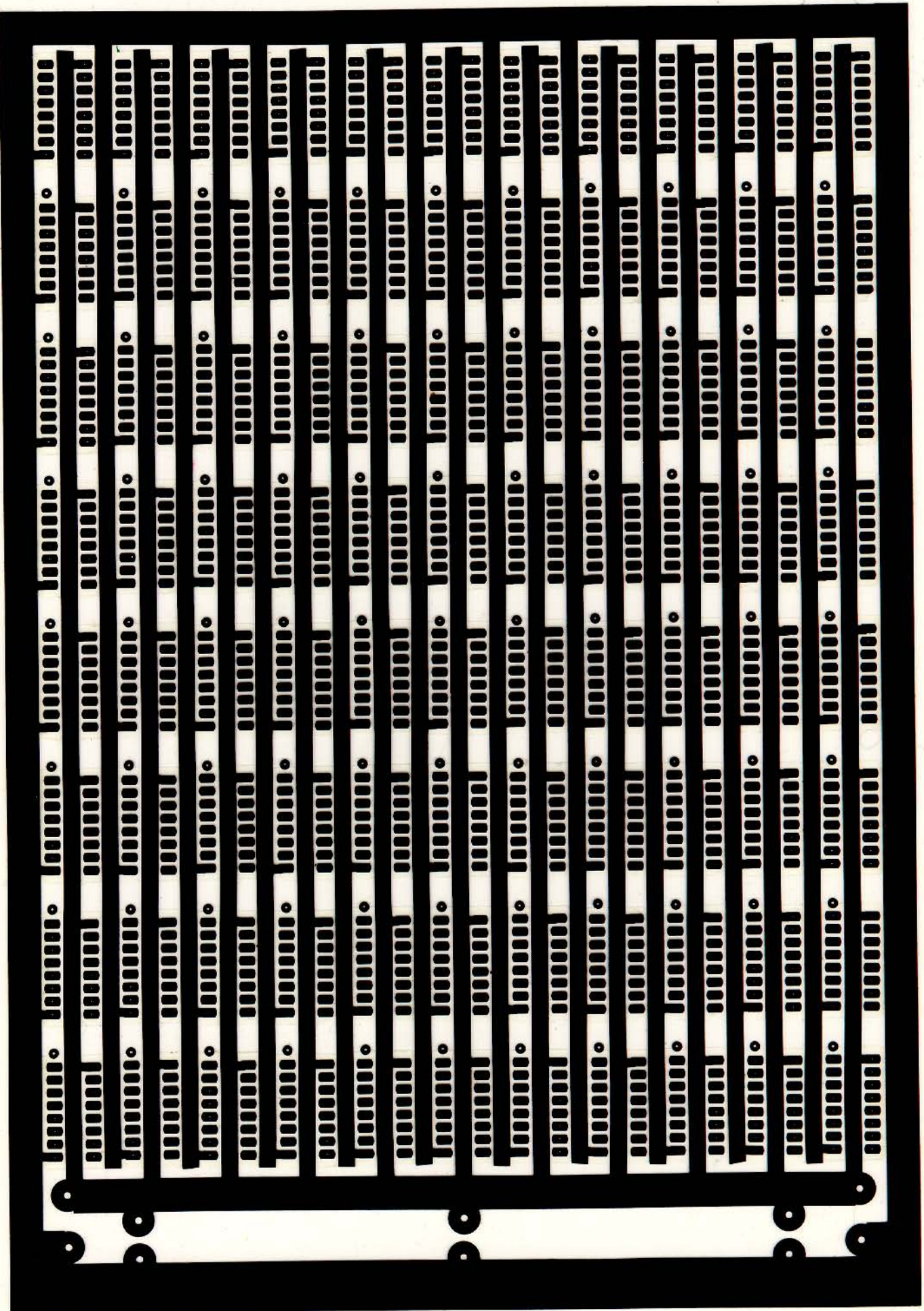


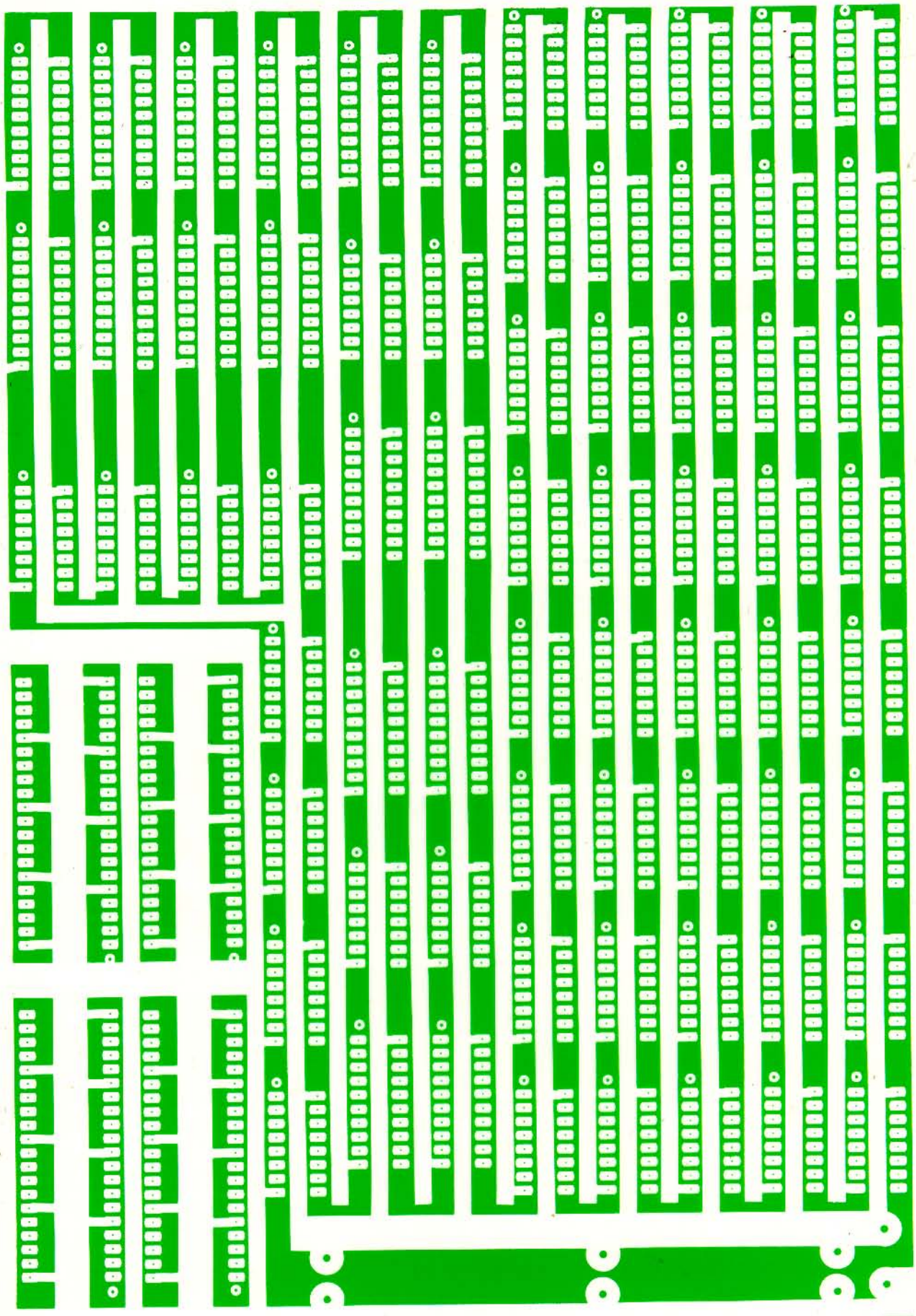
2 M-Inst. Board
5 Sept 82
Top-Left Sect.

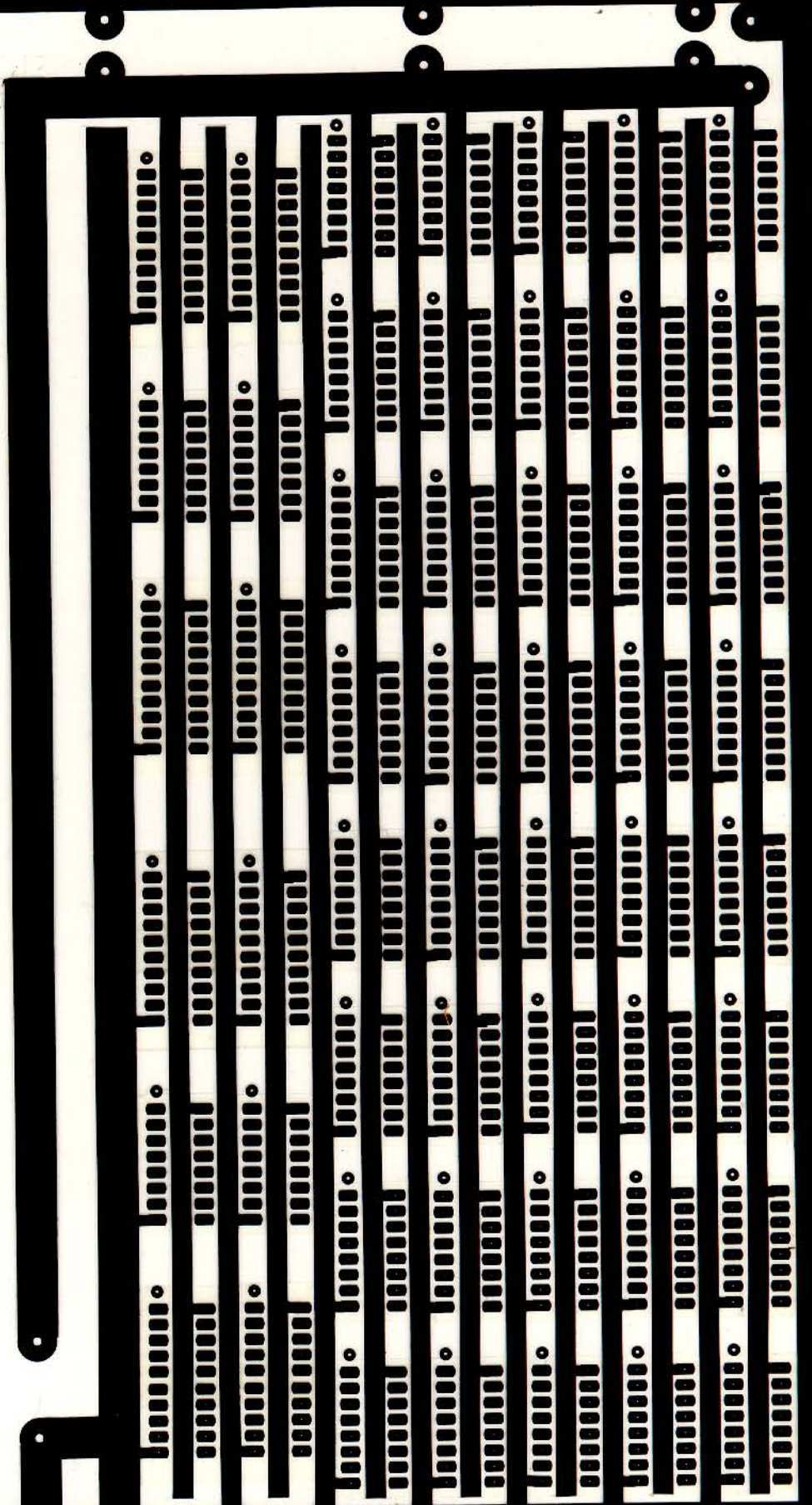


2 M-Byte Board
Bottom-Right Set in
31 Aug 82
ARD

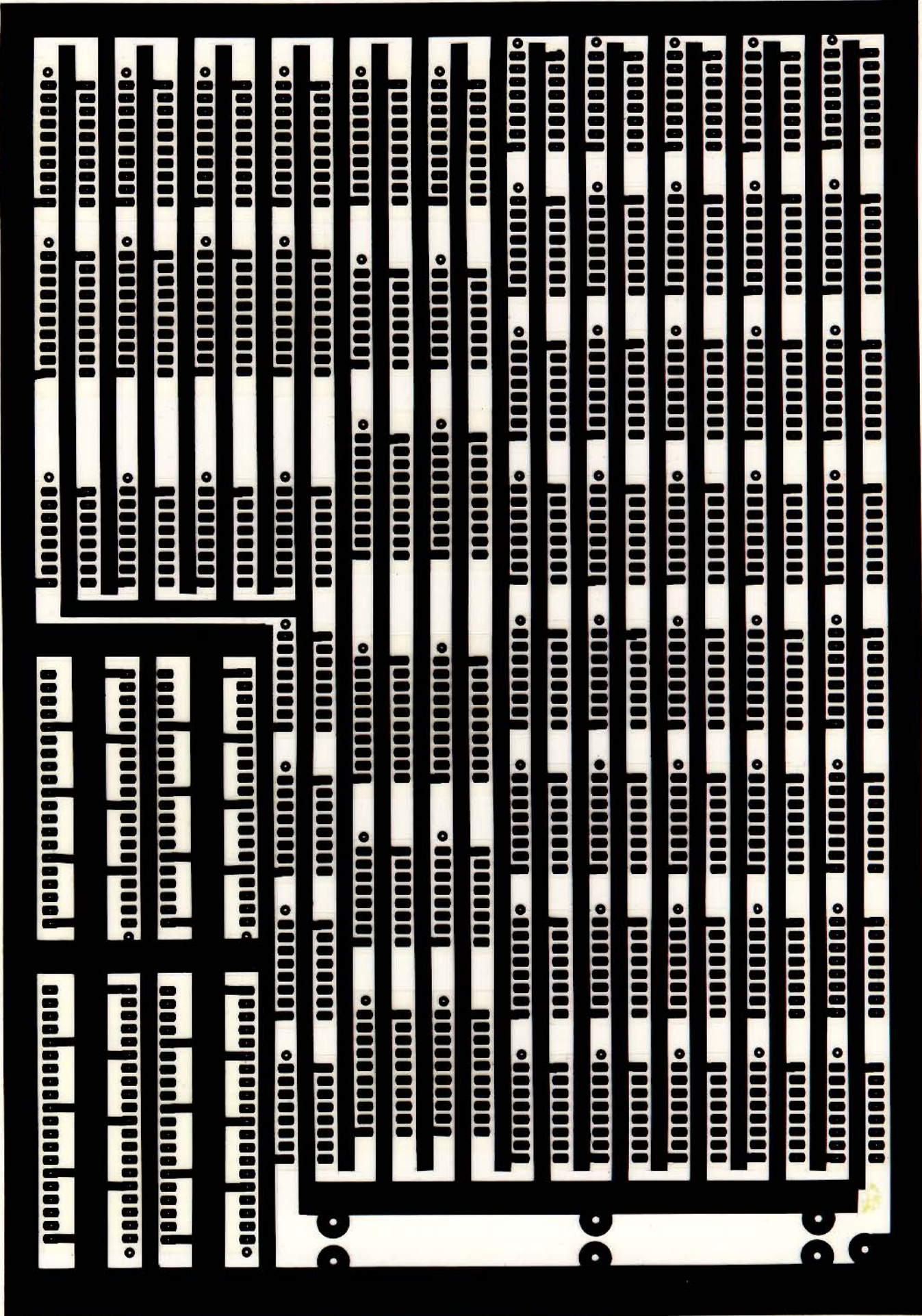
2 M-Left Board Top-Right Section
31 Aug 82 AMO



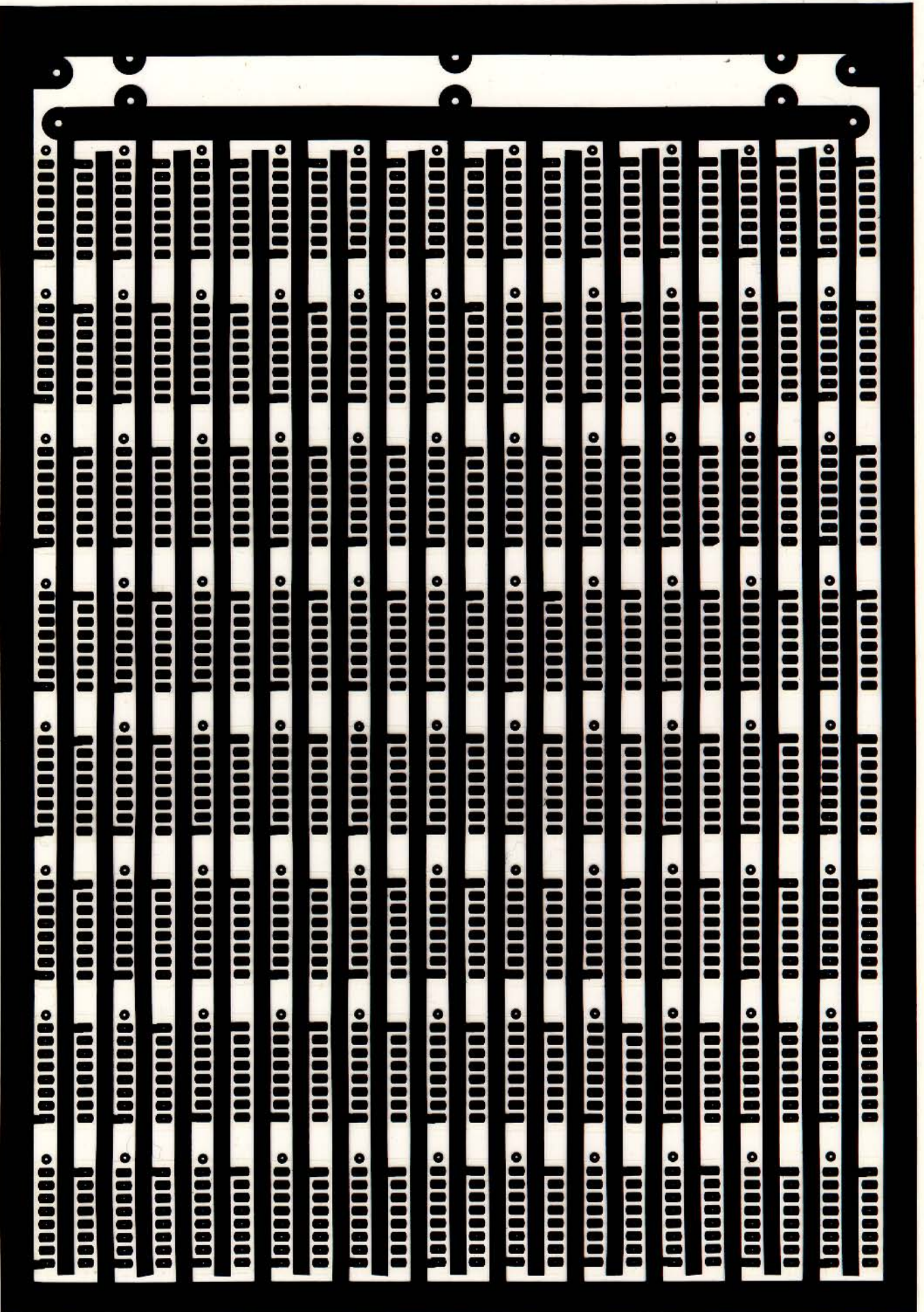




Bottom Left 2-Mix Board.
3 Sept 82 ARD

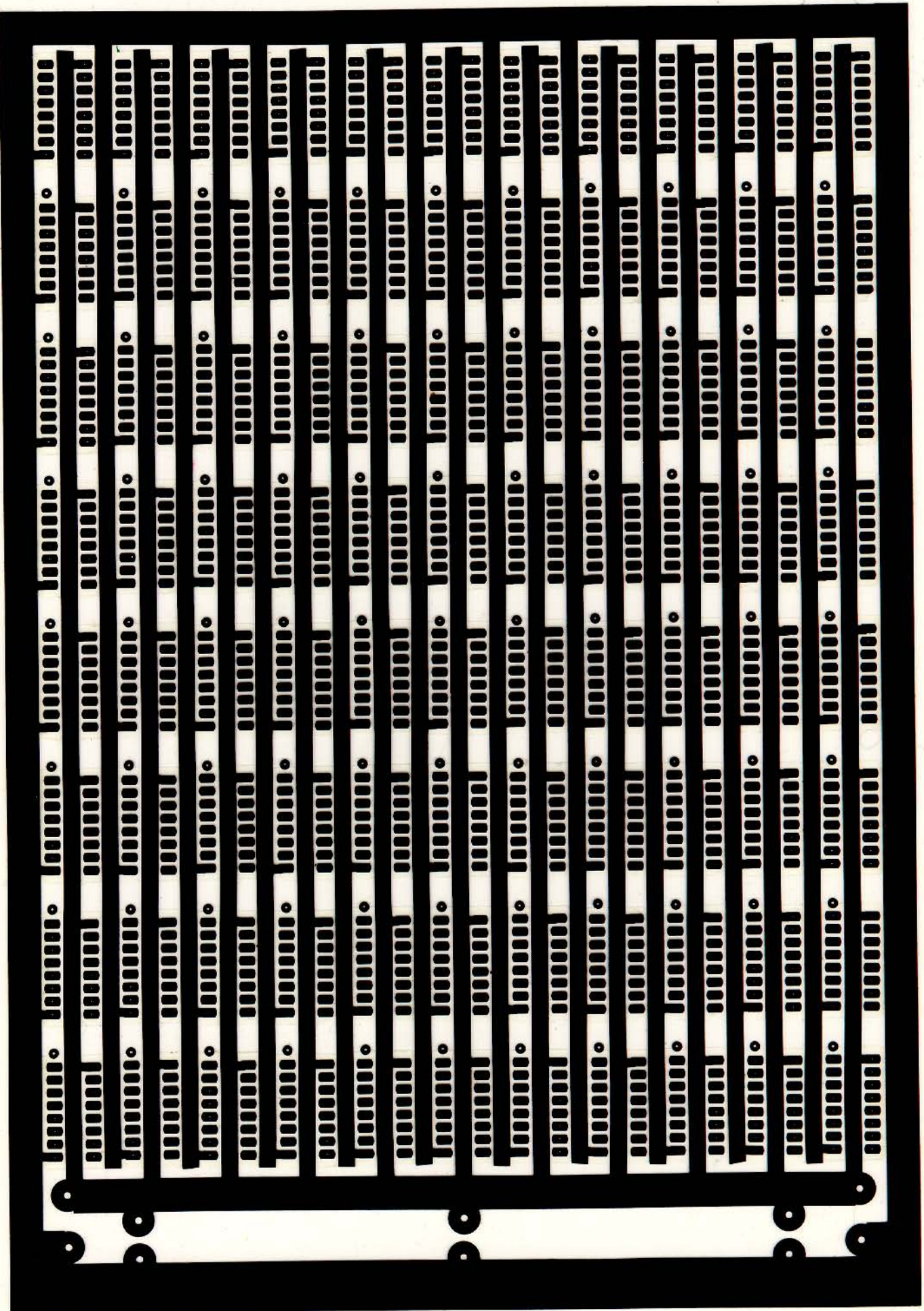


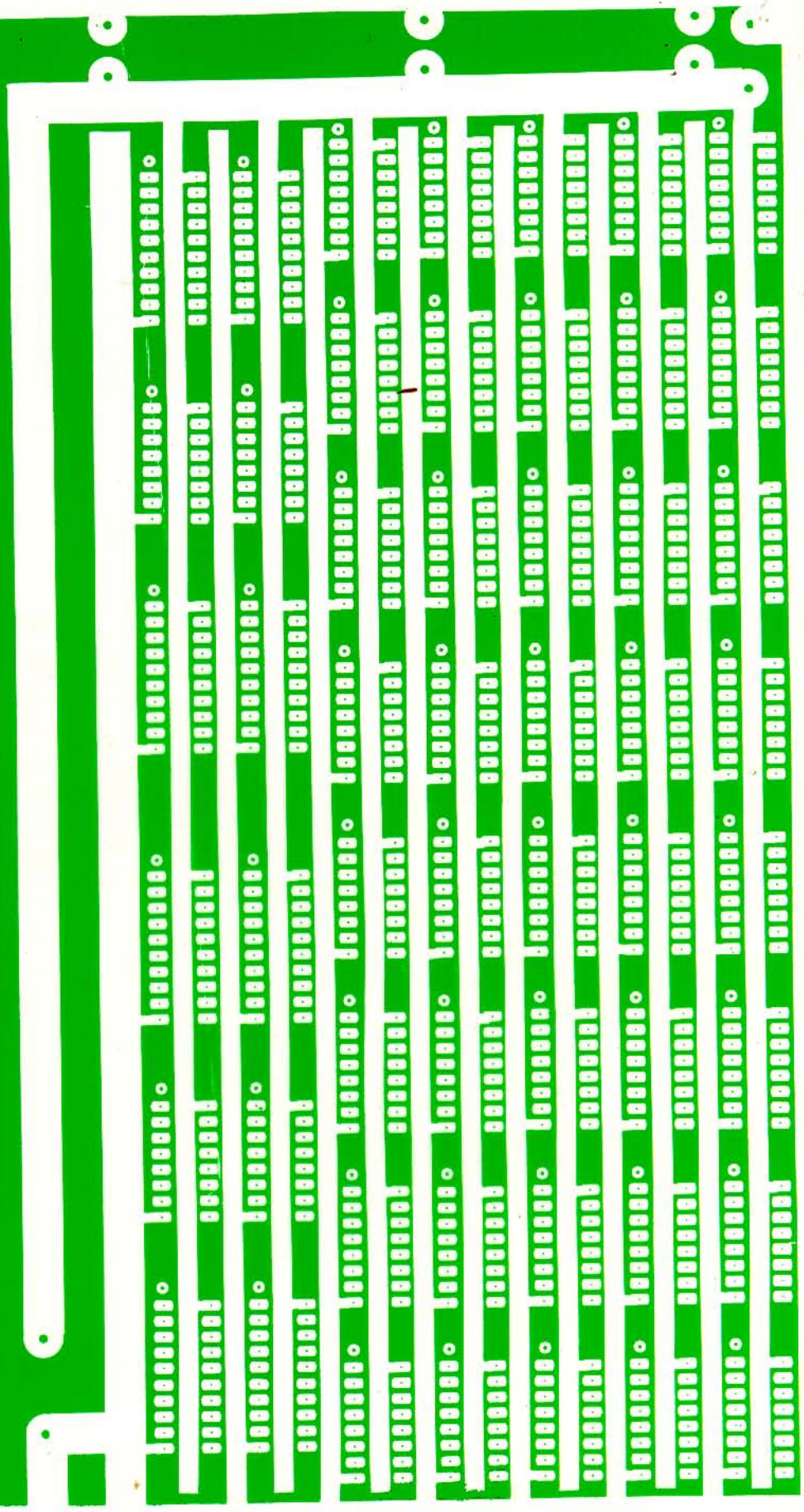
2 M-Inst. Board
5 Sept 82
Top-Left Sect.
AW

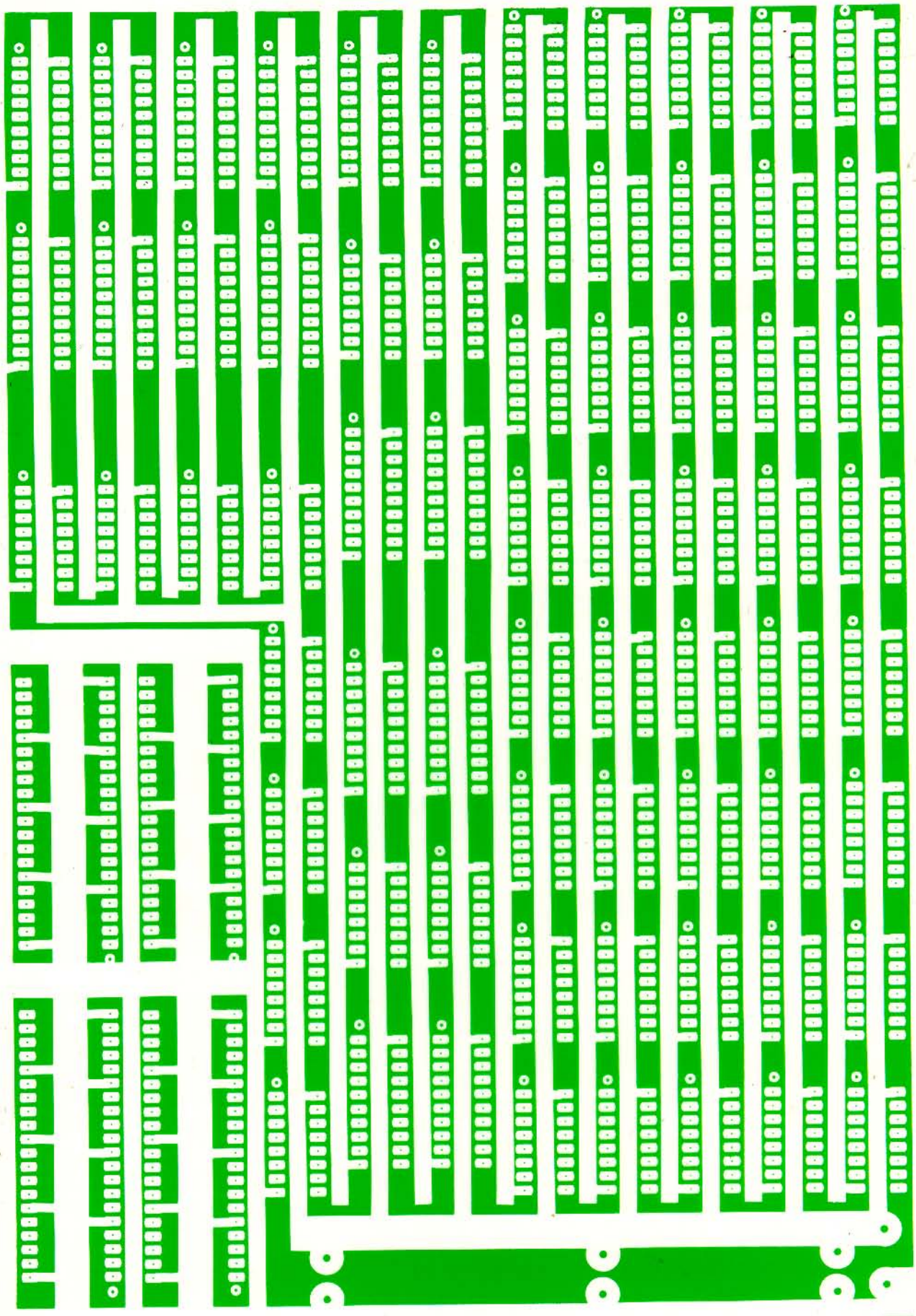


2 M-Byte Board
Bottom-Right Set in
31 Aug 82
ARD

2 M-Left Board Top-Right Section
31 Aug 82 AMO

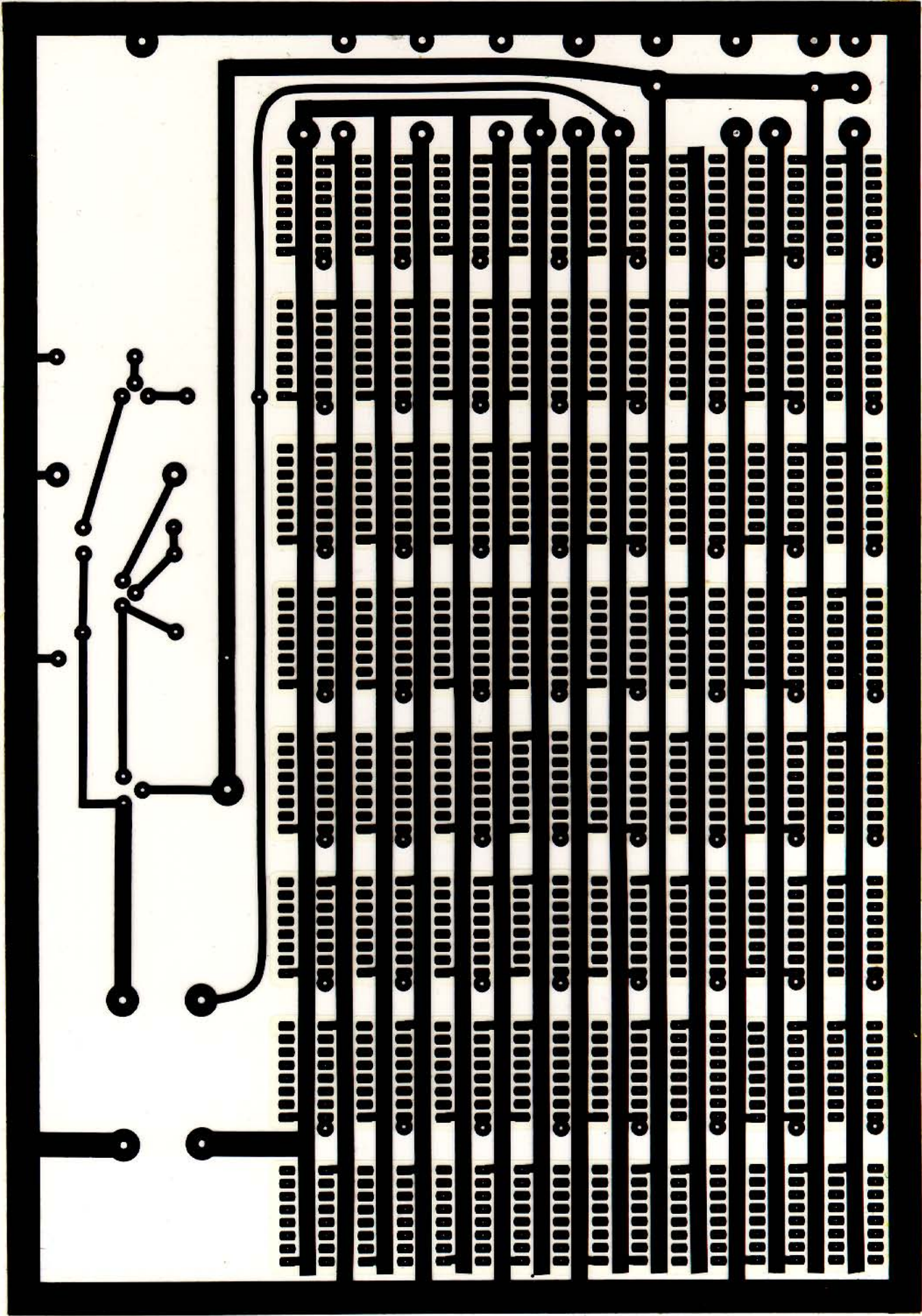






The following text is a series of approximately 20 vertical columns of characters, oriented horizontally on the page. Each column consists of a continuous stream of characters, likely representing a data stream or a specific code. The characters are densely packed and appear to be a mix of alphanumeric symbols. The columns are separated by vertical white lines. The overall appearance is that of a data dump or a series of test patterns.

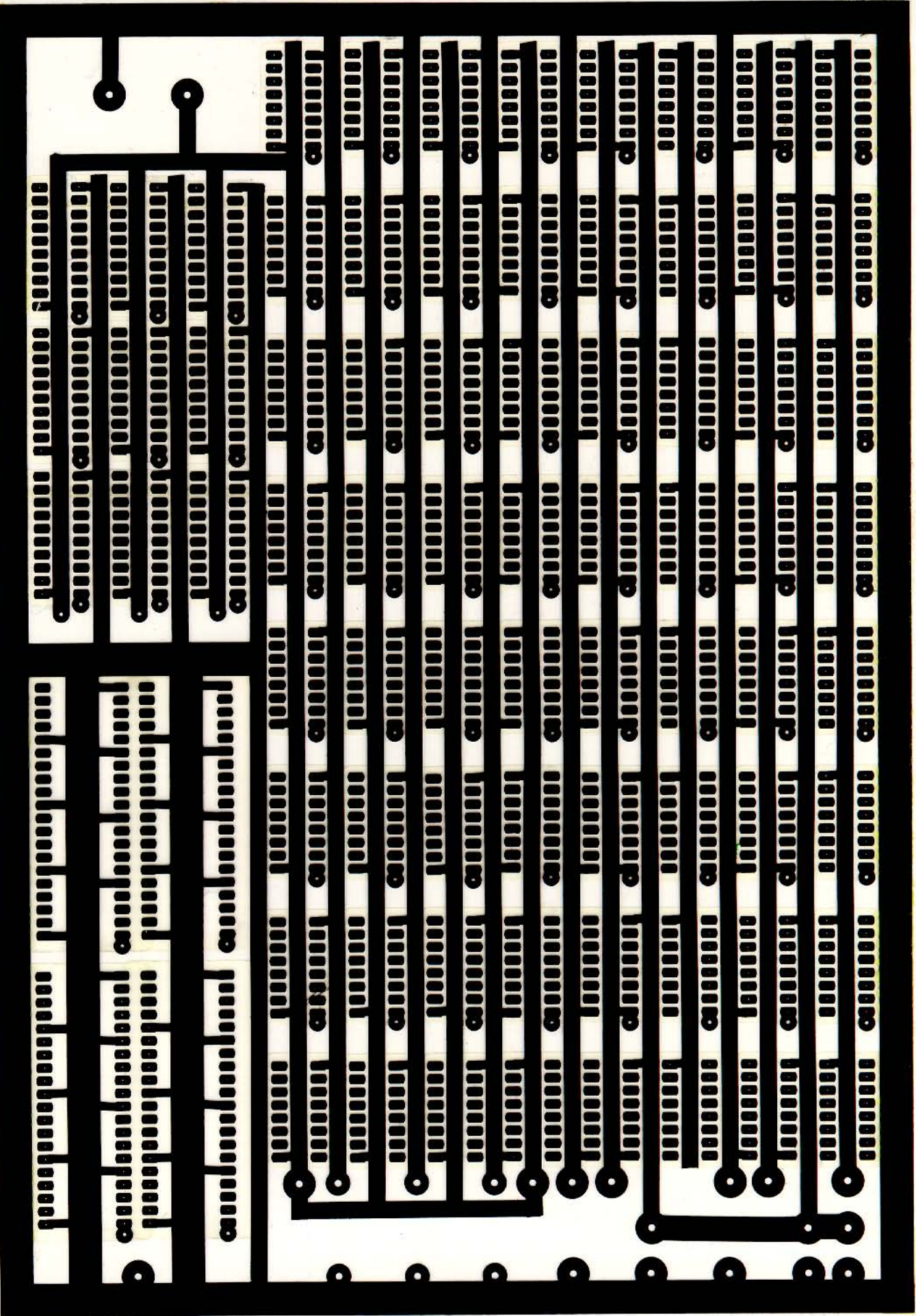
LI Memory
22 Feb 78
ASD



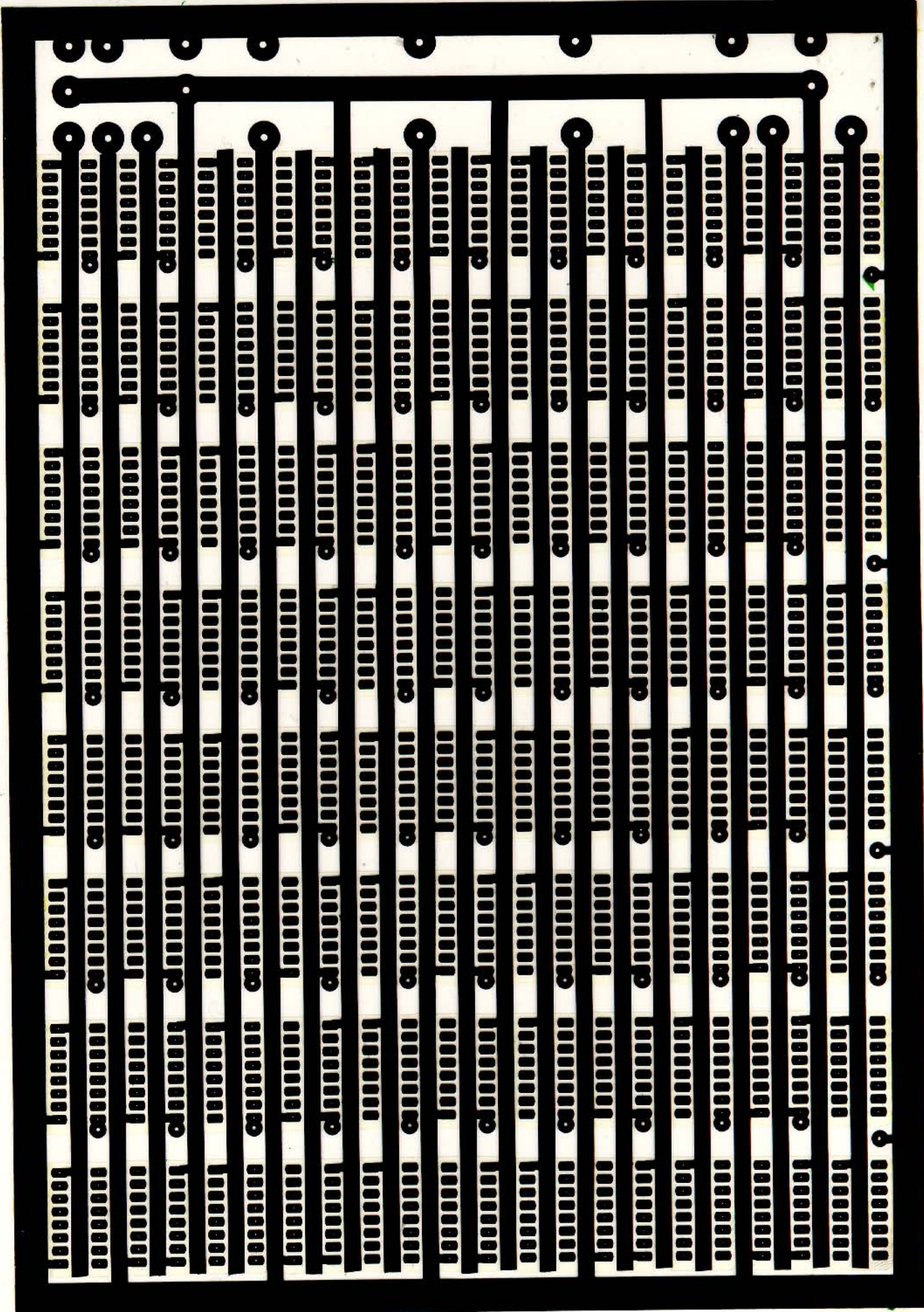
R4

Memory

22 Feb 78
A80



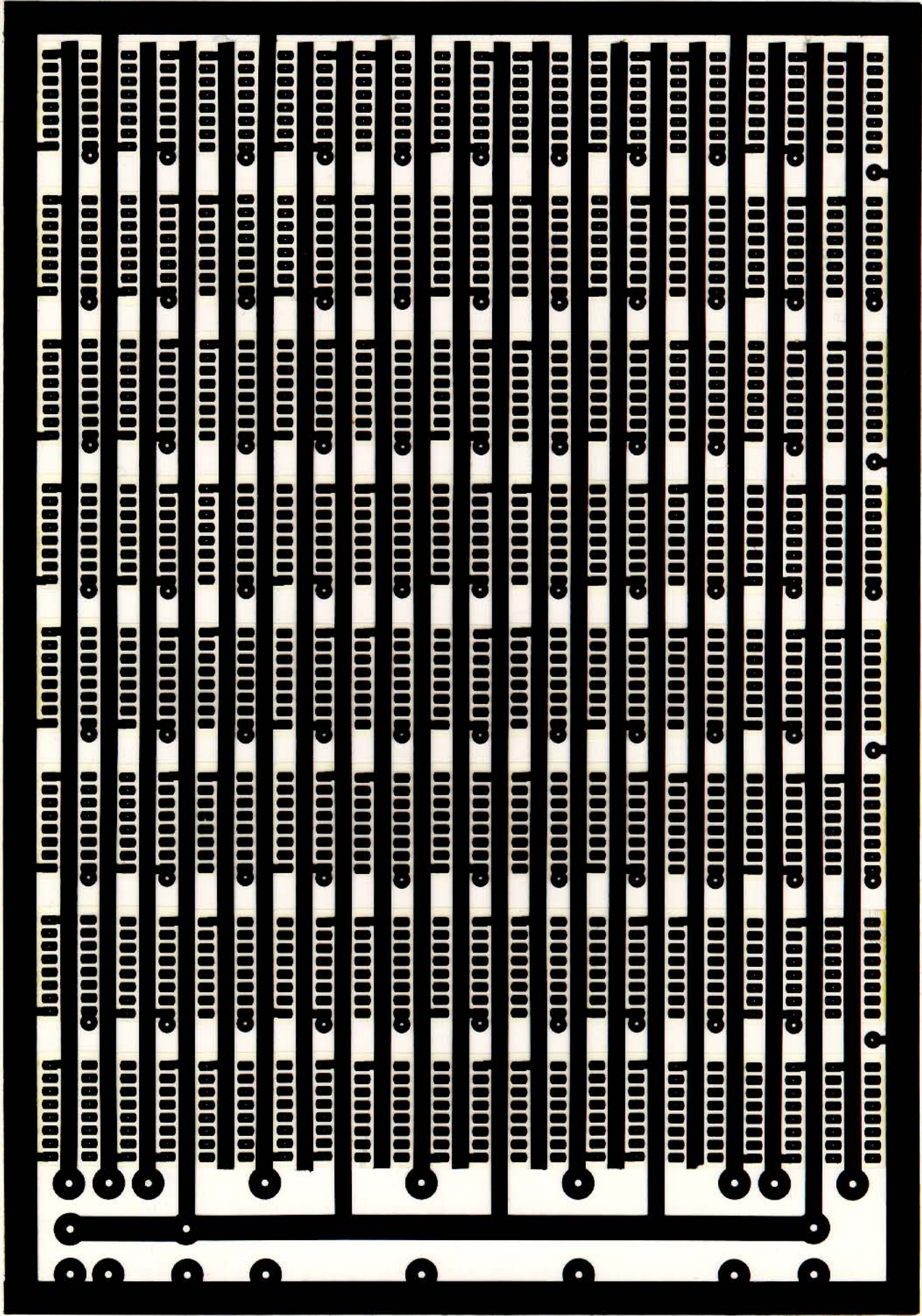
L2 Memory
21 Feb 78
AKP

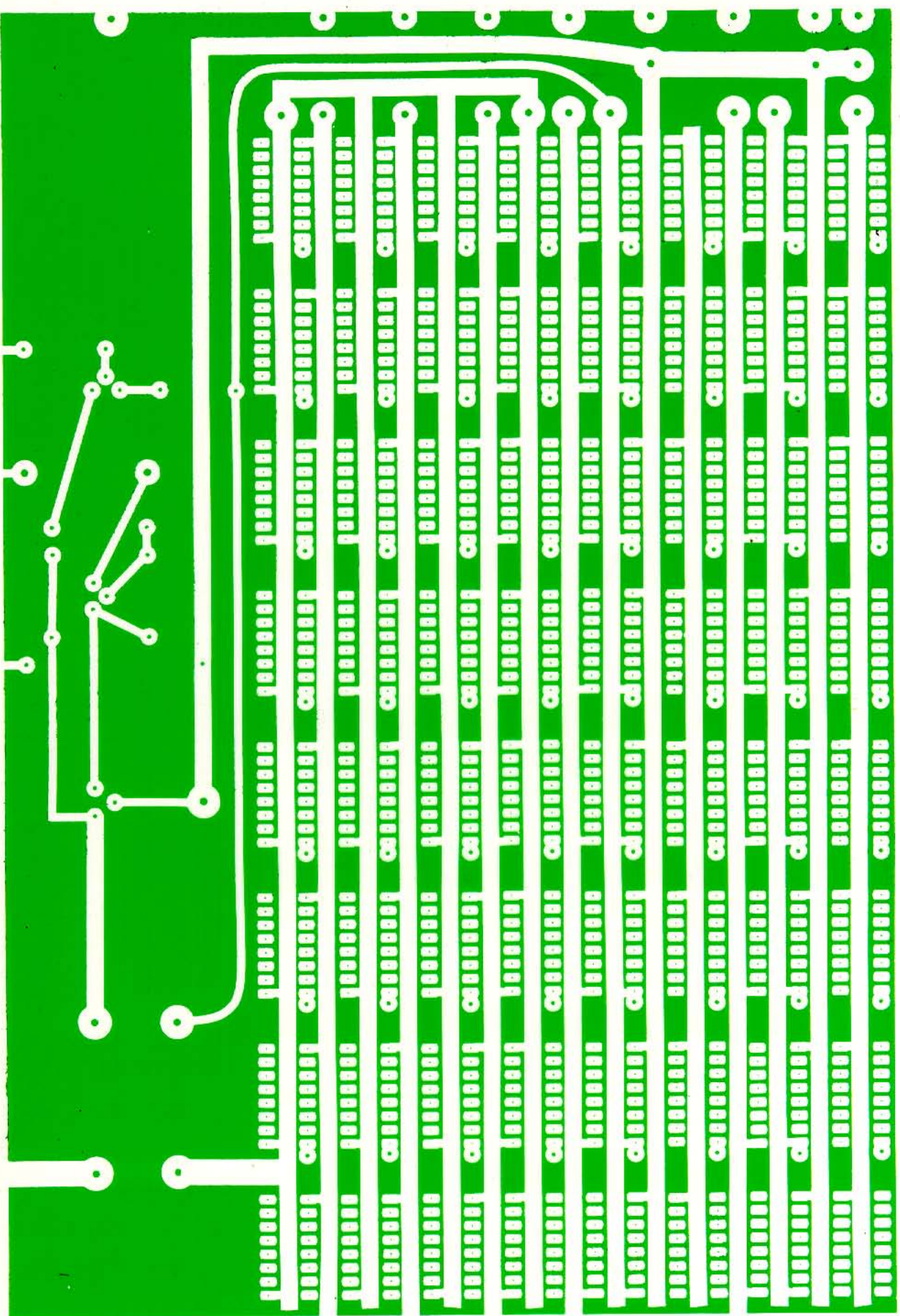


22 Feb 75

R2 Memory

ASB





Handwritten text in a cursive script, likely a letter or document, written on lined paper. The text is arranged in approximately 18 horizontal lines. The script is dense and consistent throughout, though some characters are difficult to decipher due to the cursive style and potential fading or bleed-through from the reverse side of the page. The lines are clearly defined, and the overall appearance is that of a formal or semi-formal written communication.

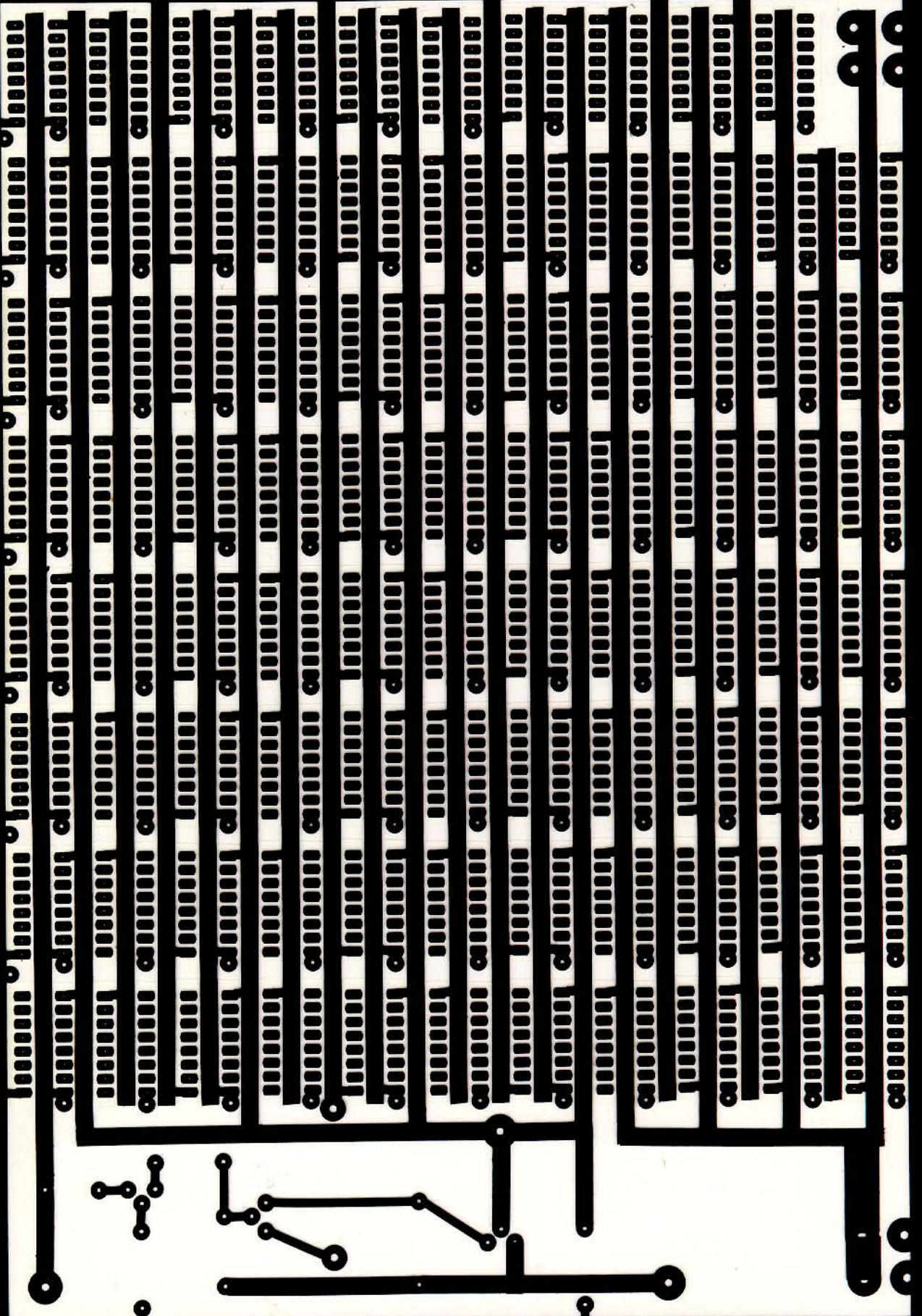
710

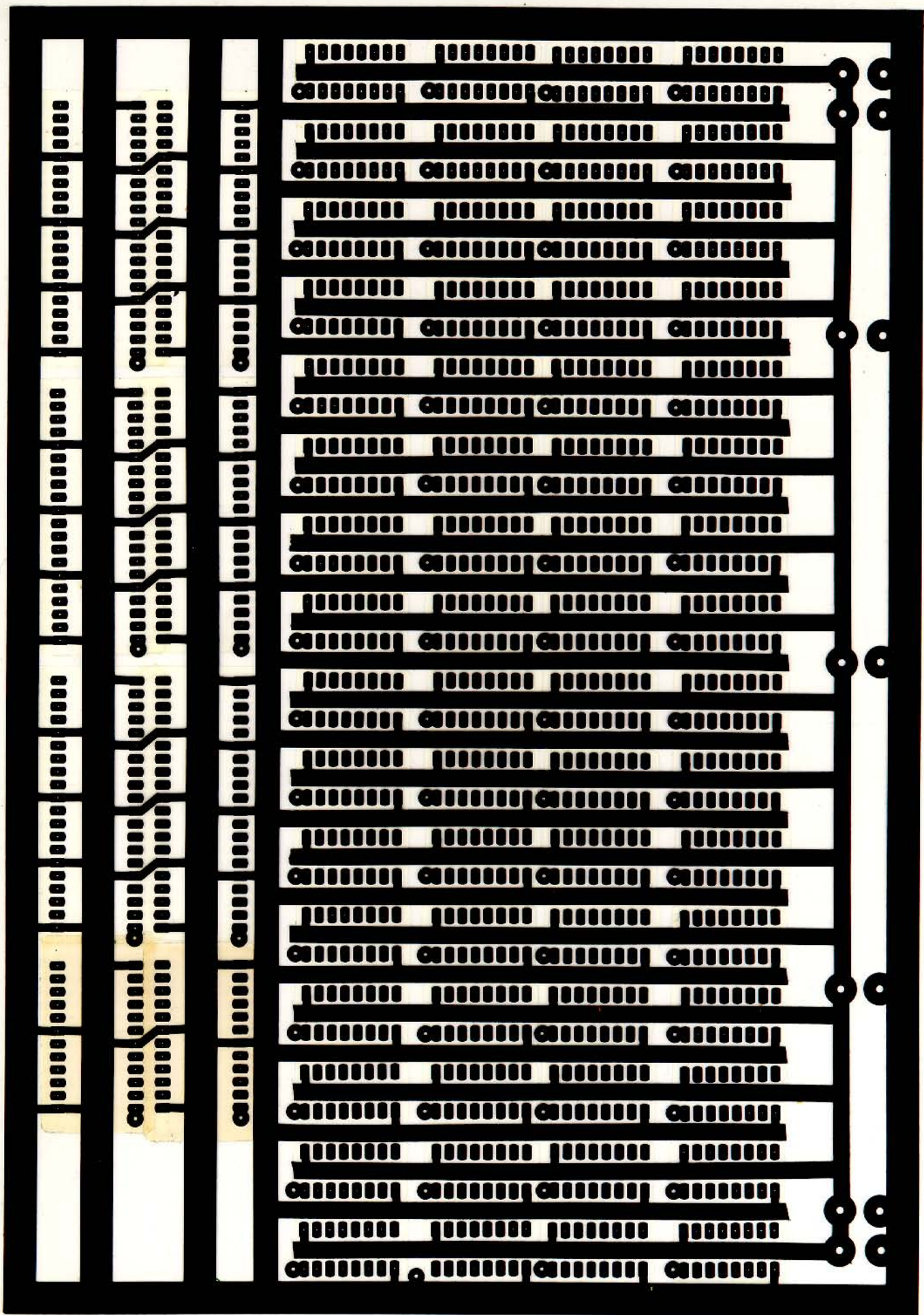
○
○
○

1965

○
○
○
○
○
○

Handwritten text on a yellow sticky note, possibly containing a name or date.





Handwritten text on a yellow sticky note, oriented vertically. The text is written in a cursive script and appears to be a date and a number: "21 509 850".

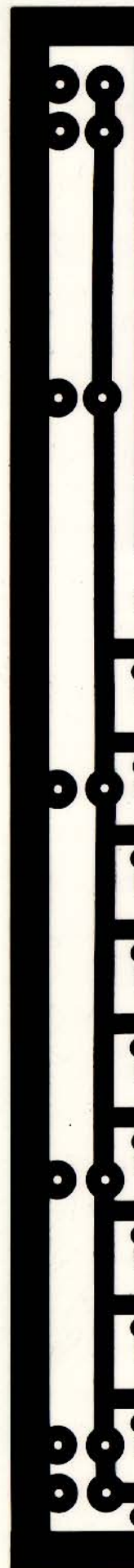
Handwritten text in a highly stylized, repetitive script, possibly a form of shorthand or a specific dialect. The text is organized into approximately 20 horizontal lines, each containing several groups of characters. The script is dense and uniform in style throughout the page.

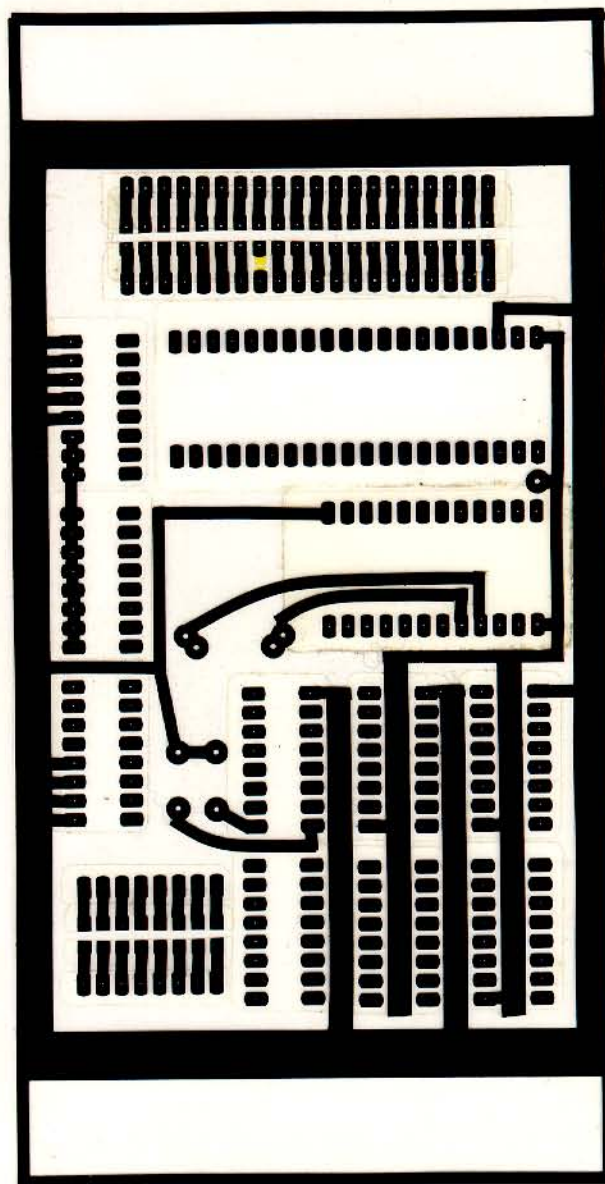


Repeating patterns of black and white bars on a white background, arranged in a grid within a black frame. The patterns consist of horizontal bars of varying lengths and thicknesses.

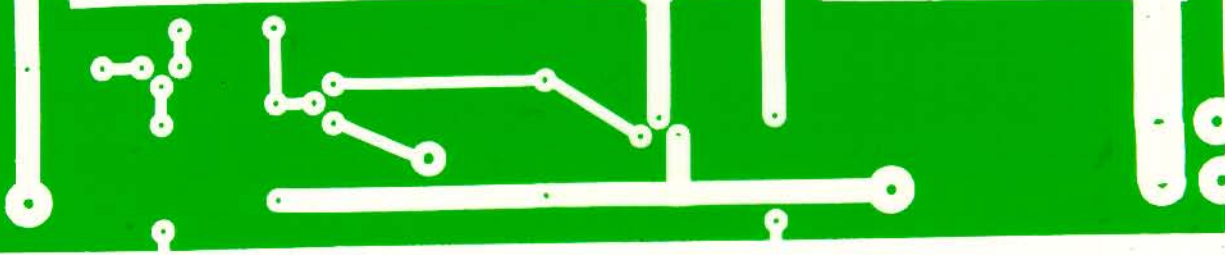
Handwritten text on a yellowed, torn strip of paper on the right side of the page. The text is partially obscured and difficult to read.

Continuation of the repeating patterns of black and white bars, filling most of the page area within the black frame. The patterns are consistent with those seen in the top section.

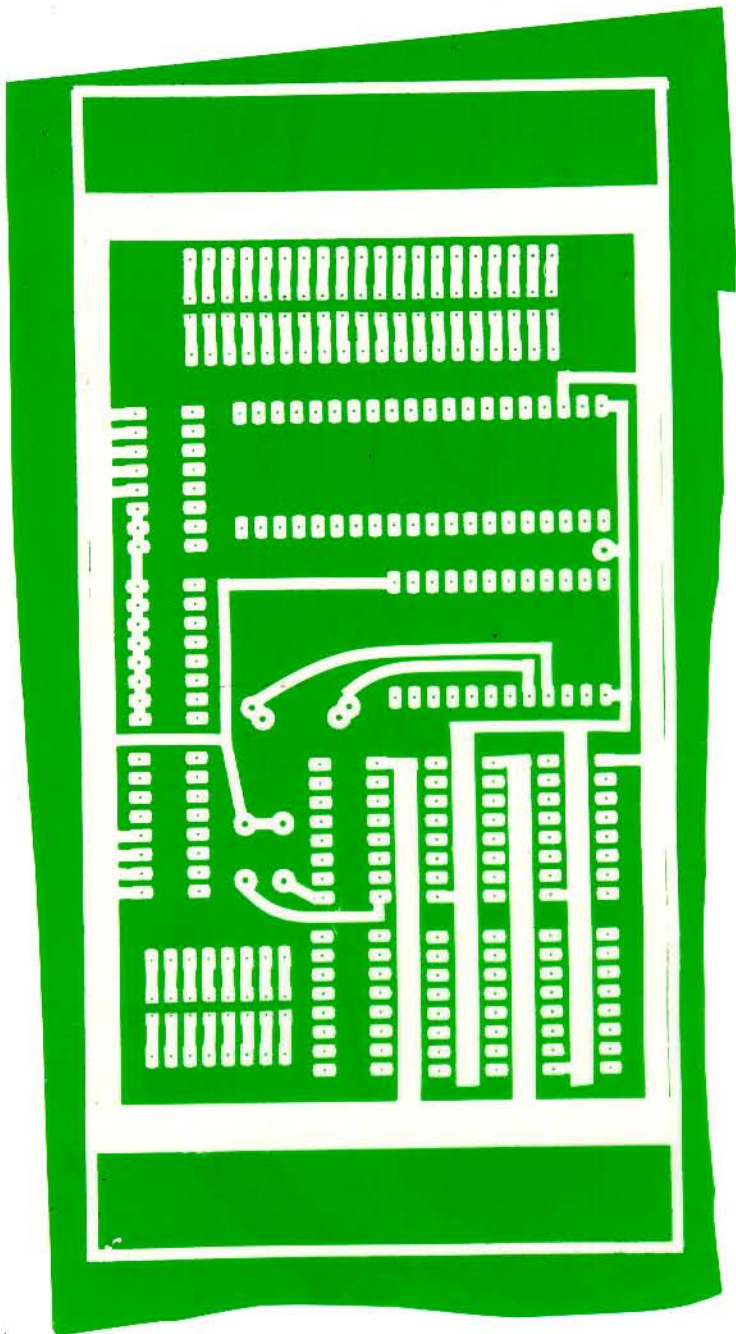


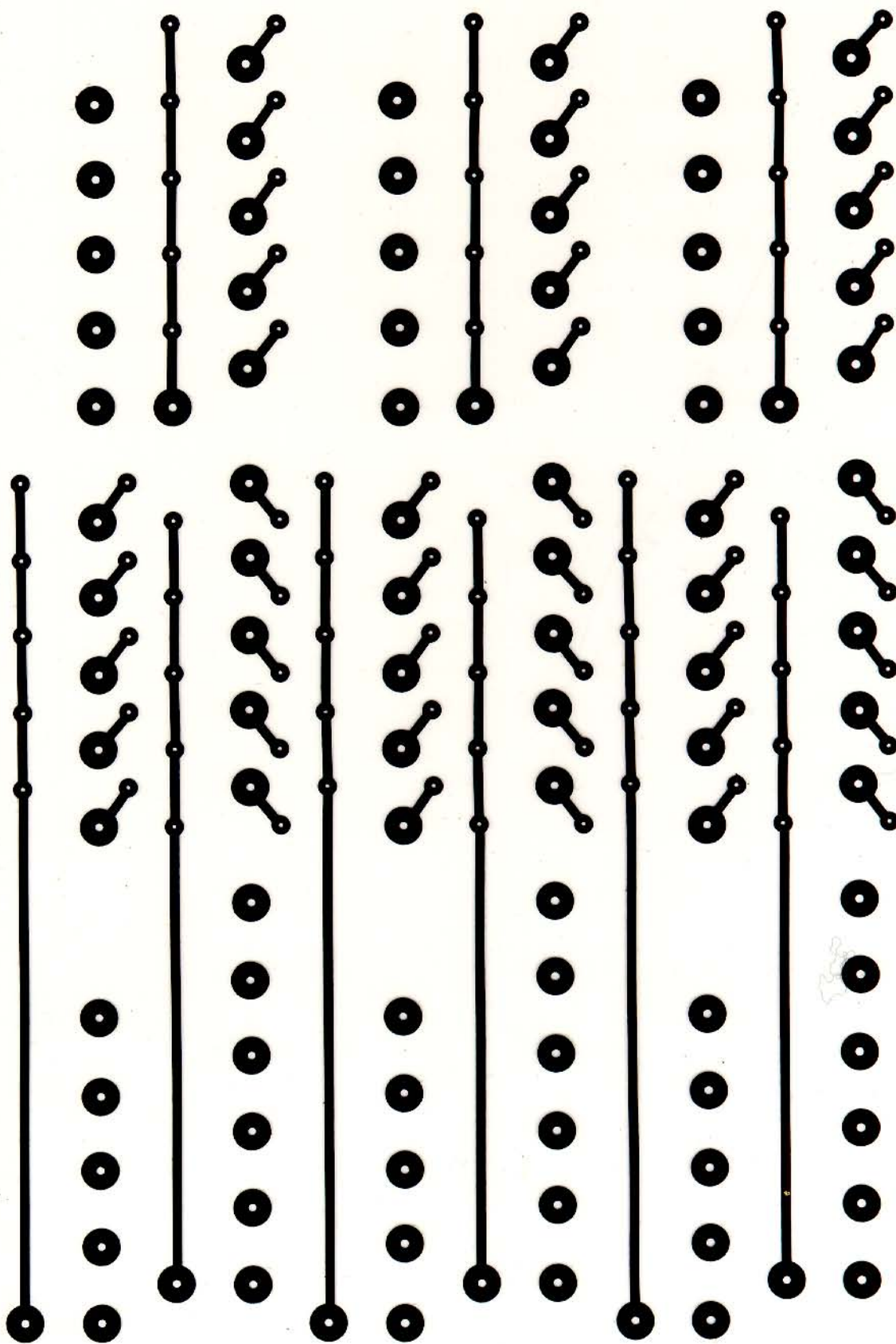


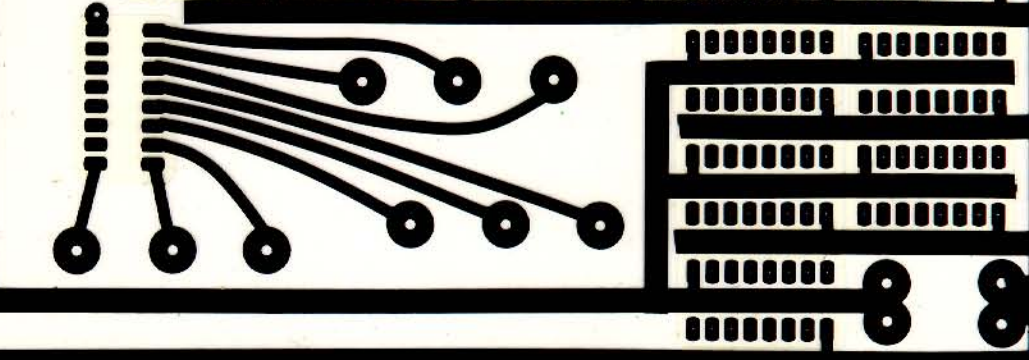
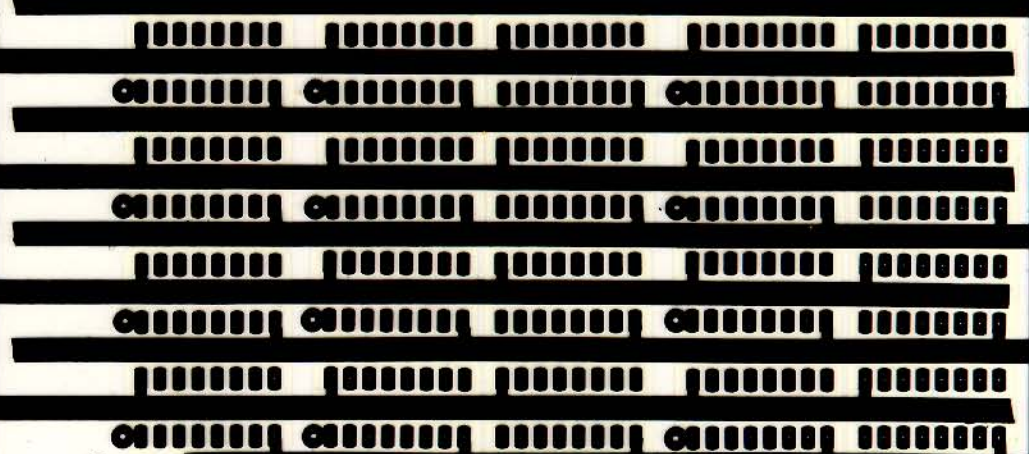
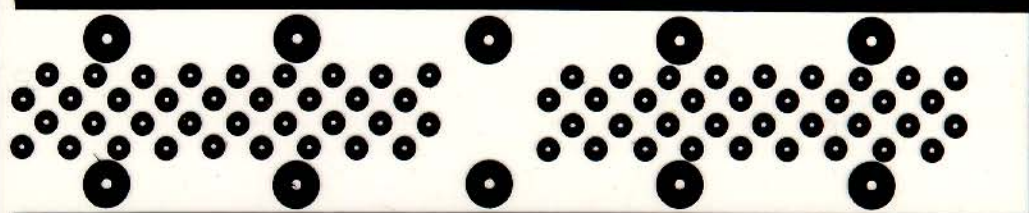
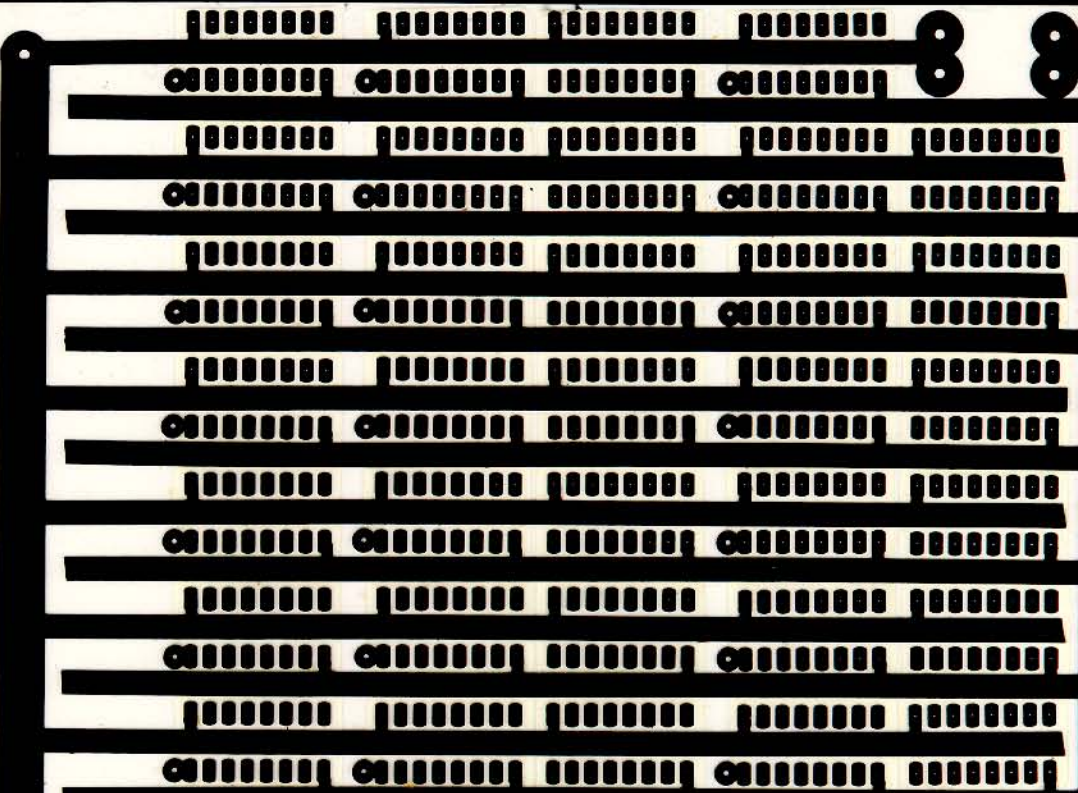
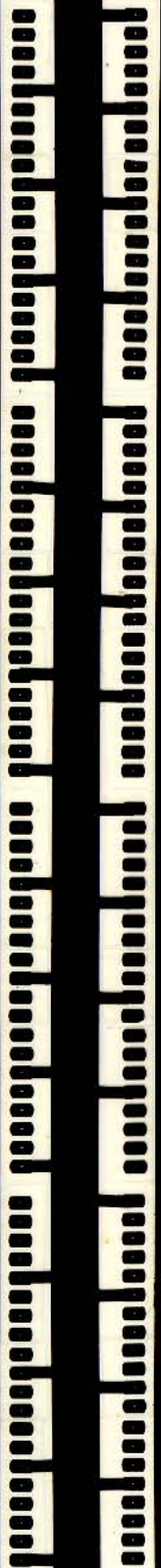
Handwritten text in a cursive script, likely a historical document or manuscript. The text is arranged in approximately 15 horizontal lines across the page. The ink is dark and the paper shows signs of age and wear.

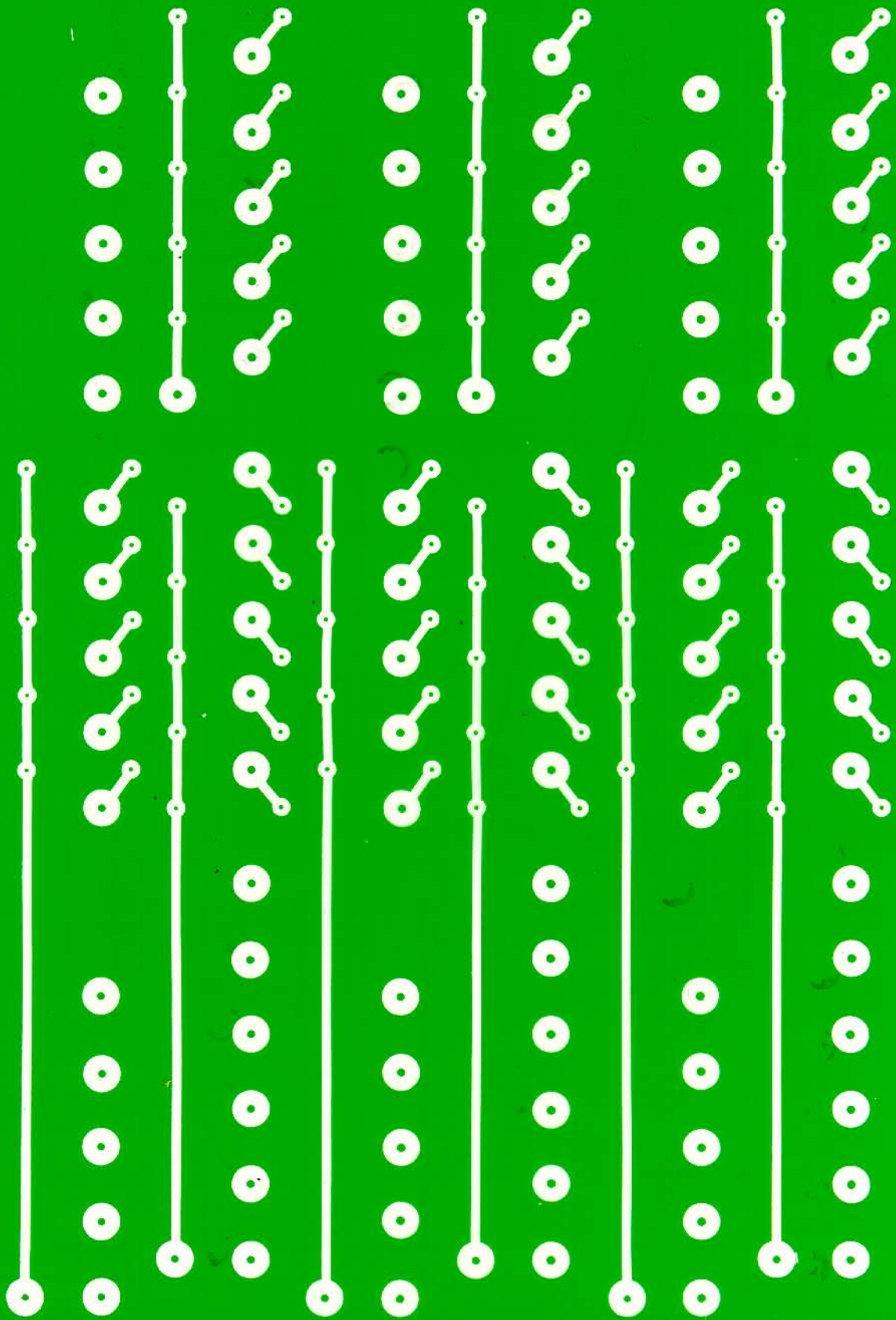


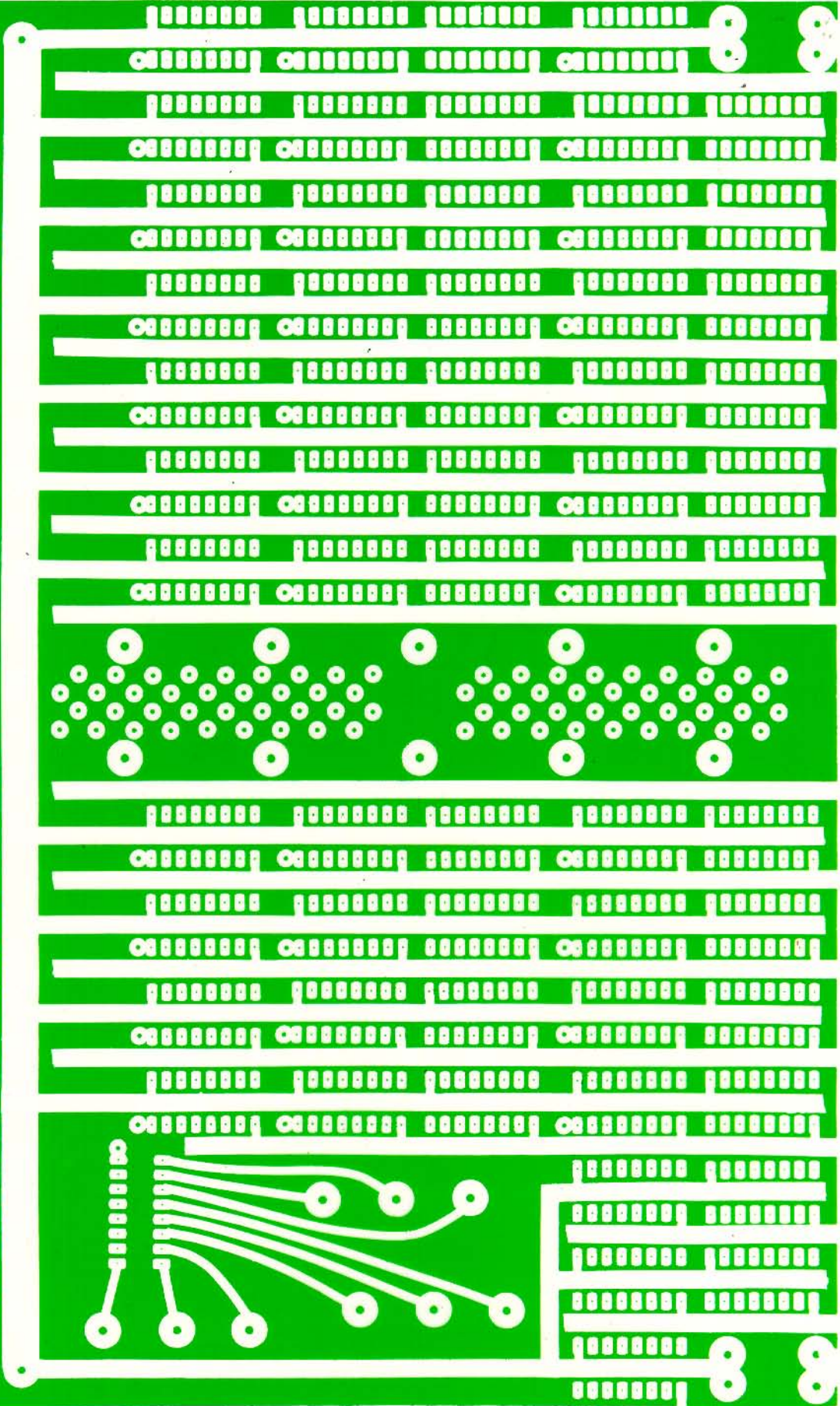
Handwritten text in a cursive script, likely a historical document or manuscript. The text is arranged in approximately 25 horizontal lines, with some lines starting with a large initial letter. The script is dense and characteristic of early modern European handwriting.

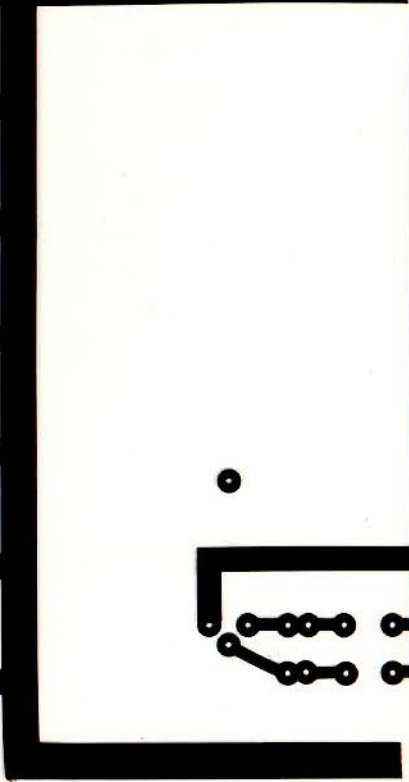
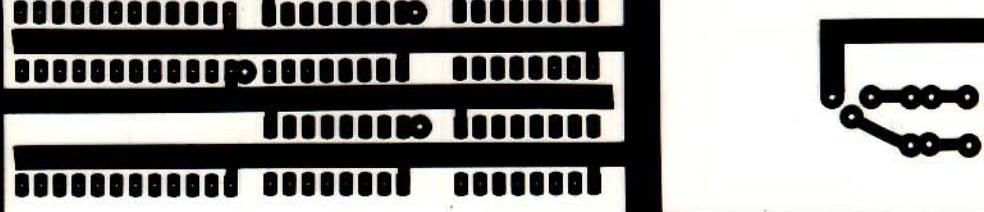
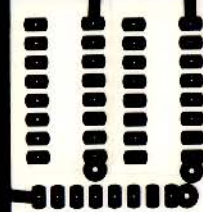
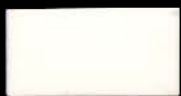
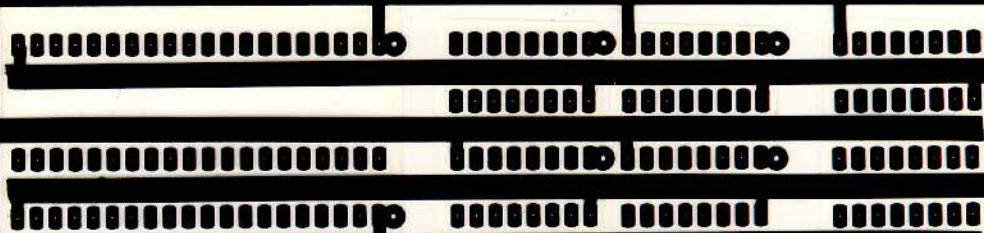
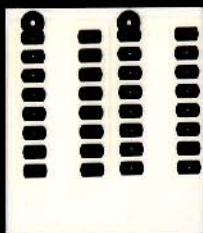
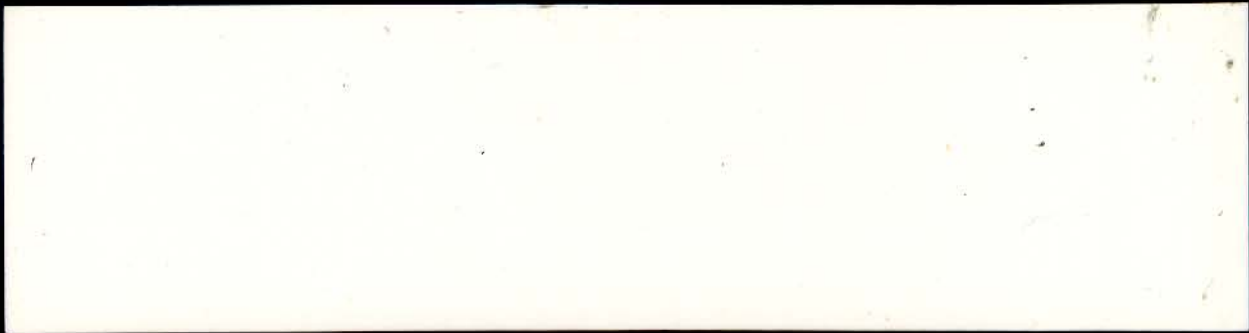


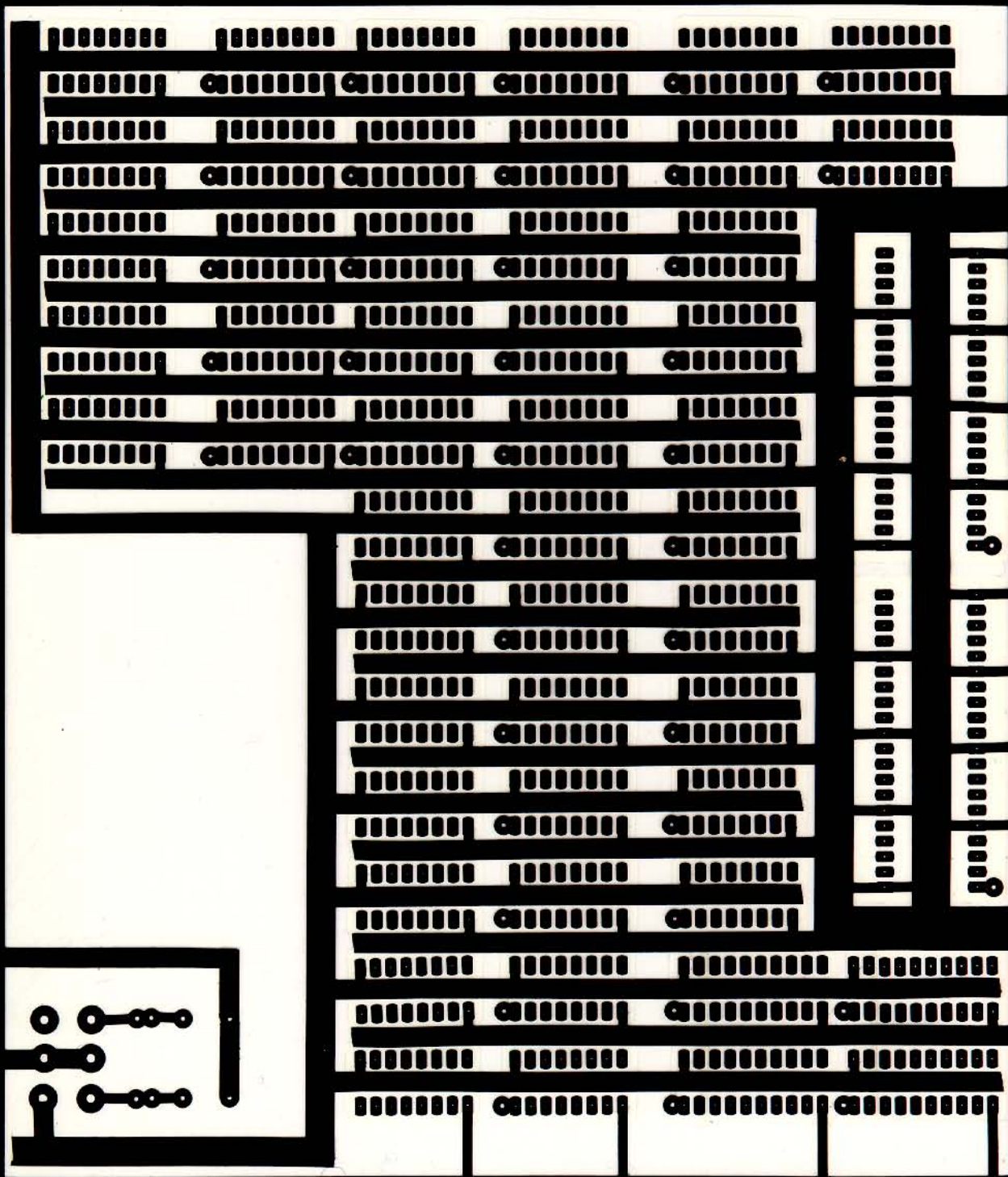


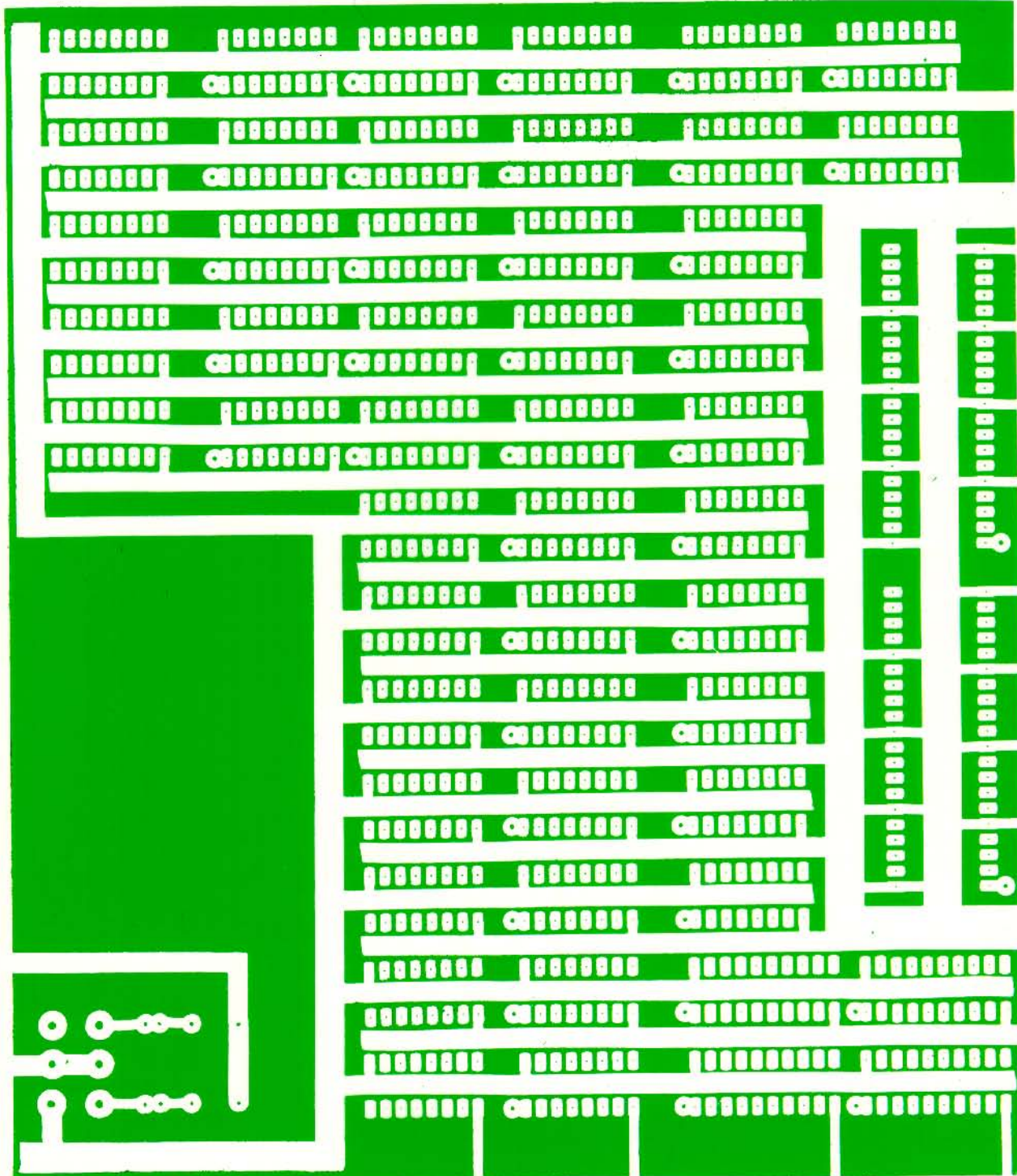
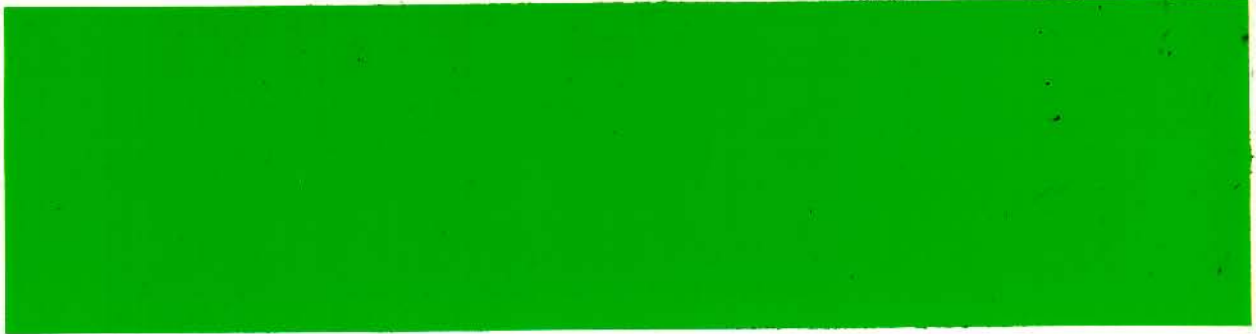


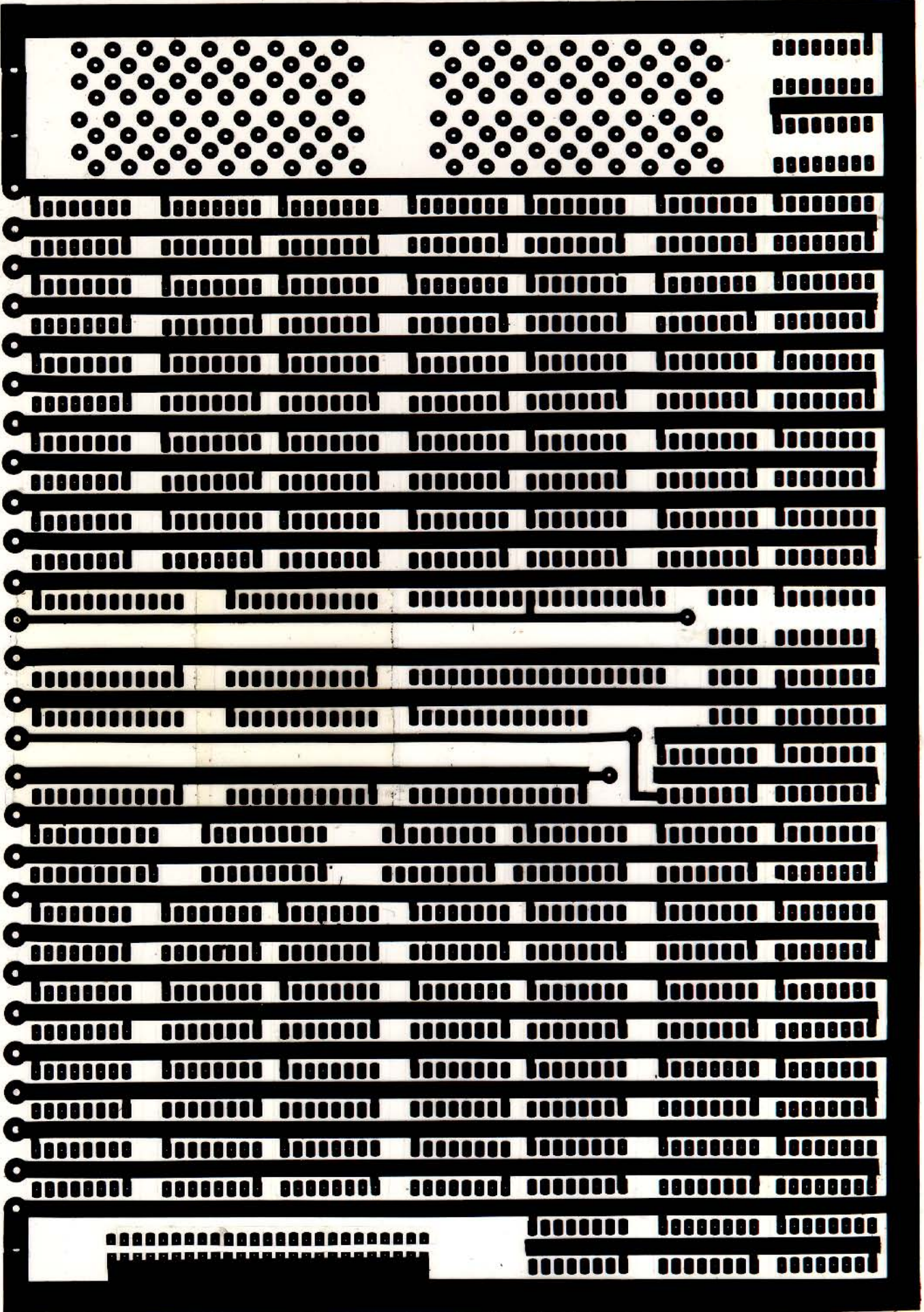


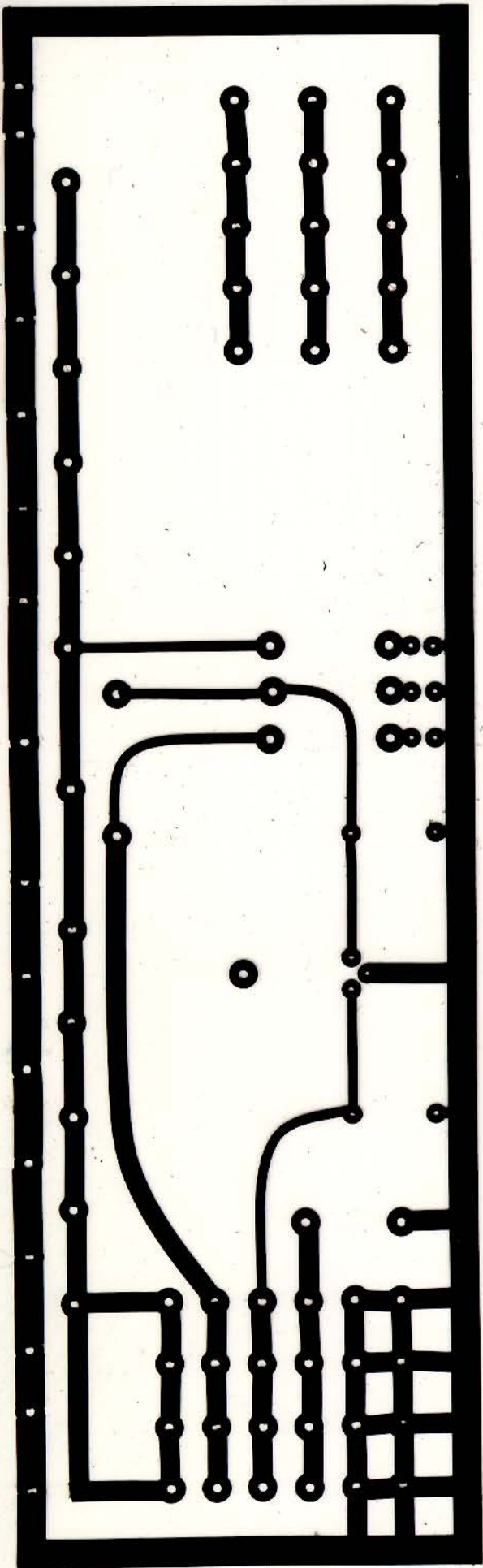


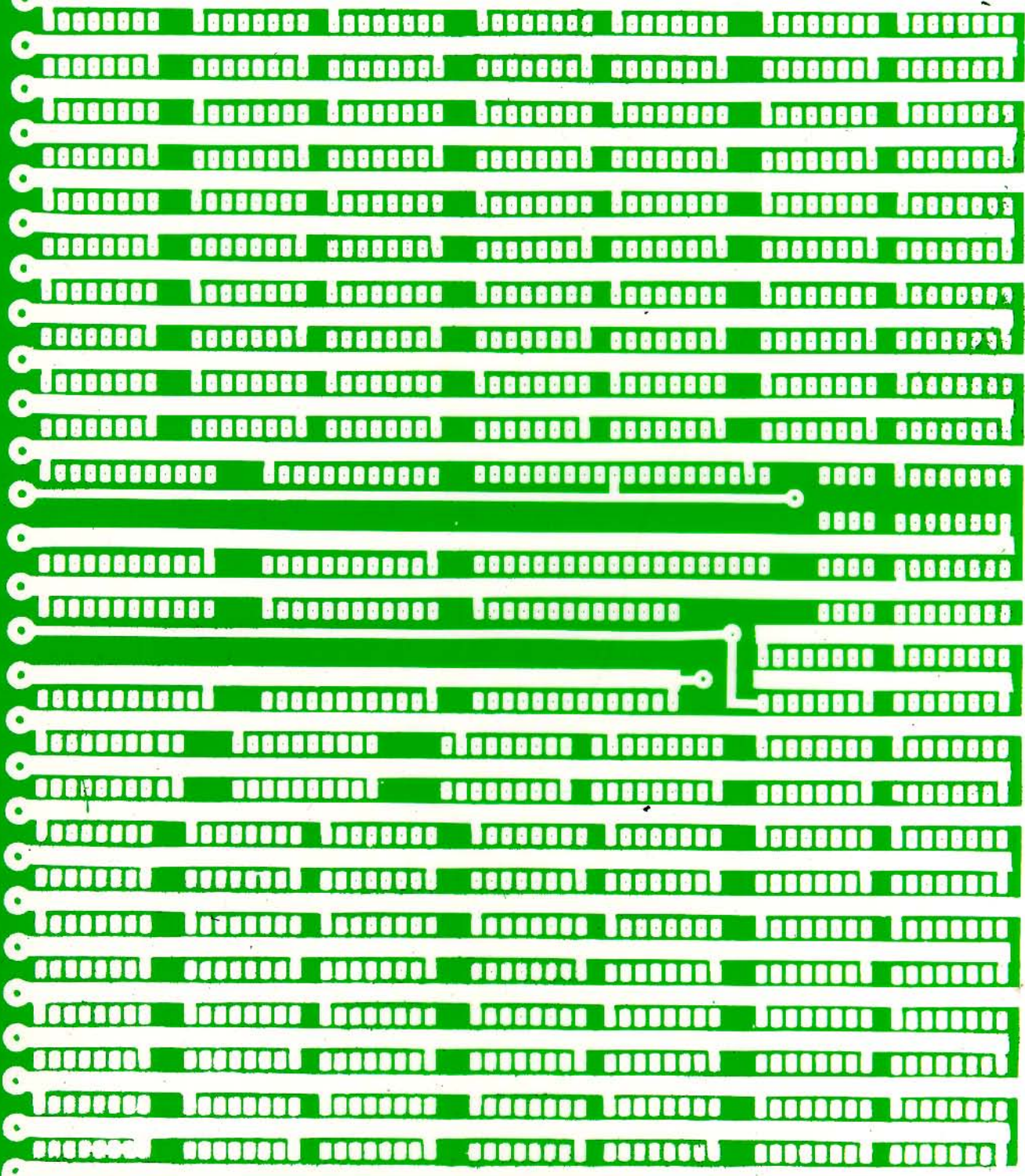
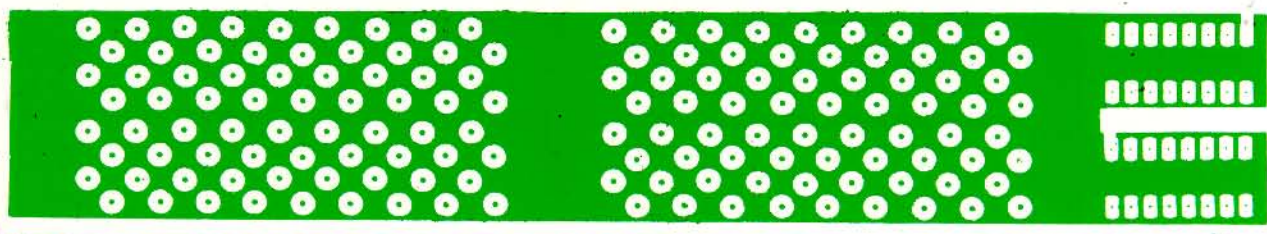


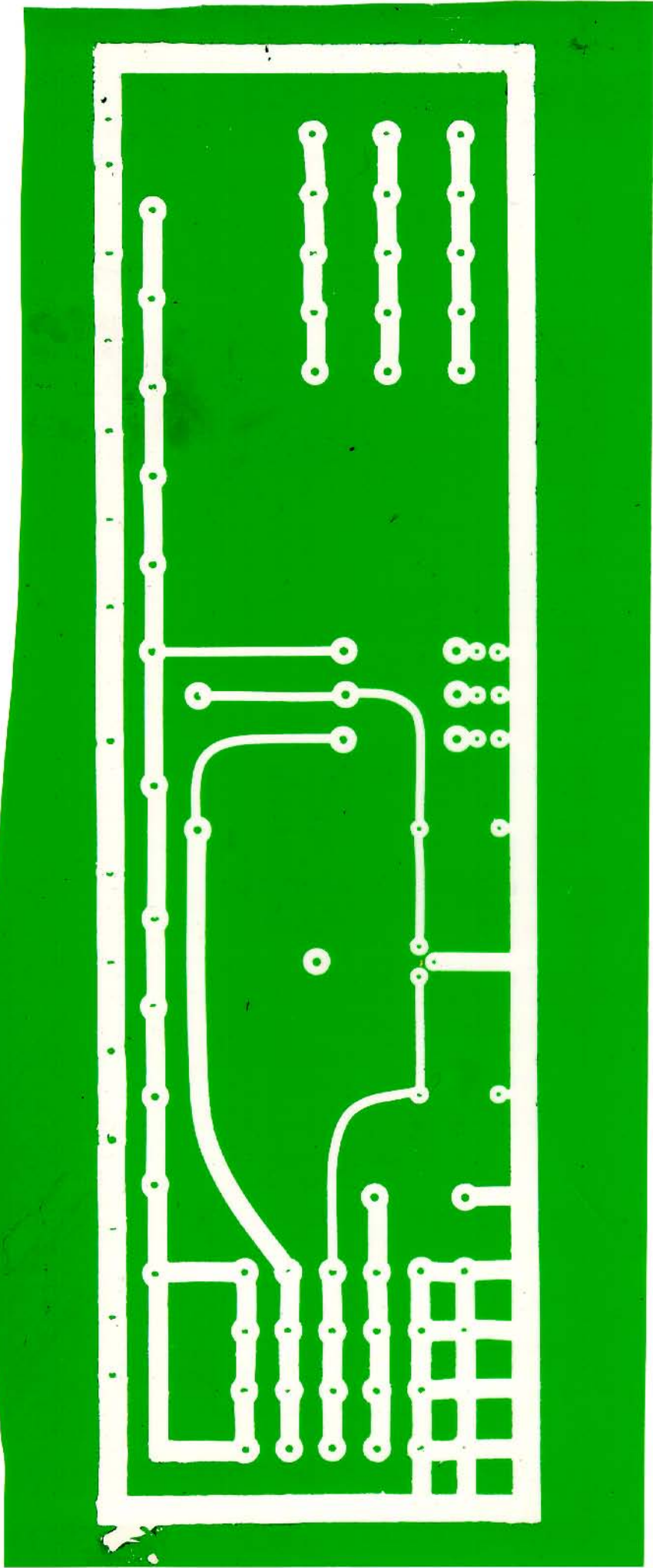


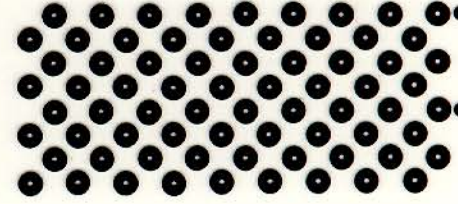
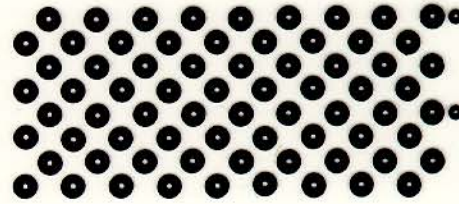
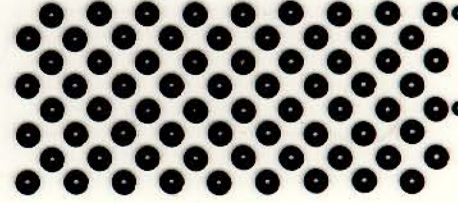
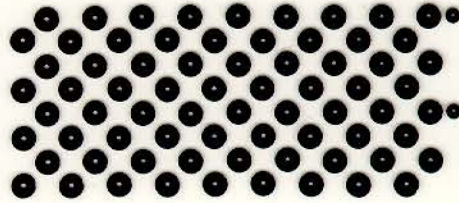
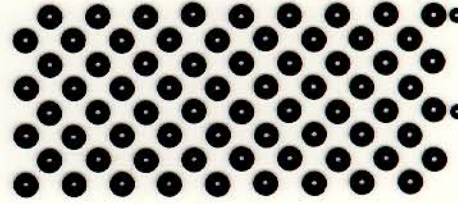
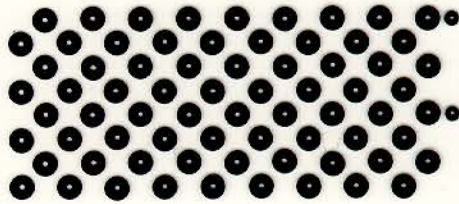
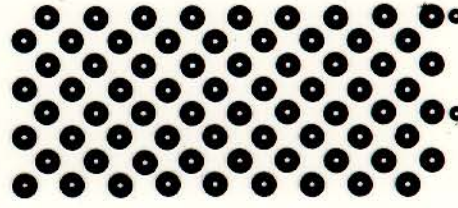
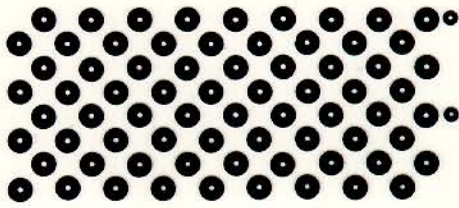




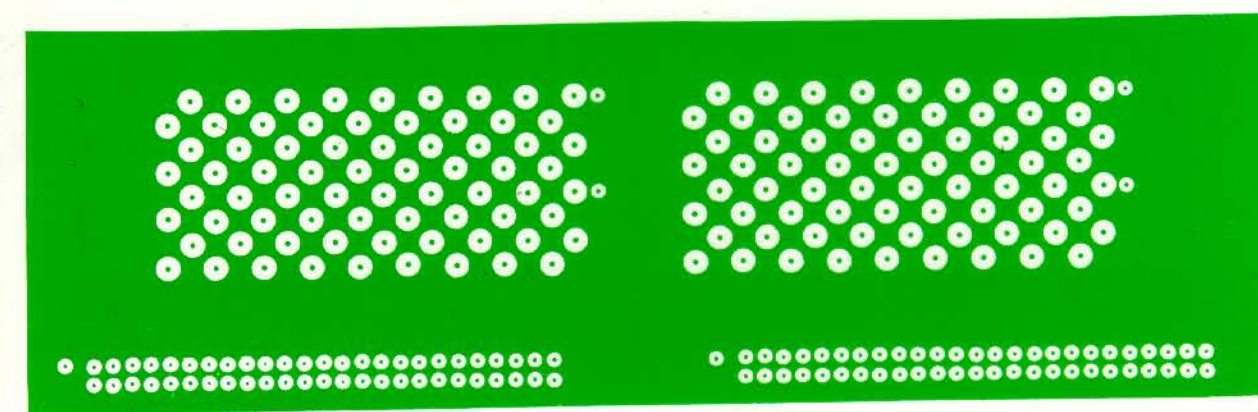
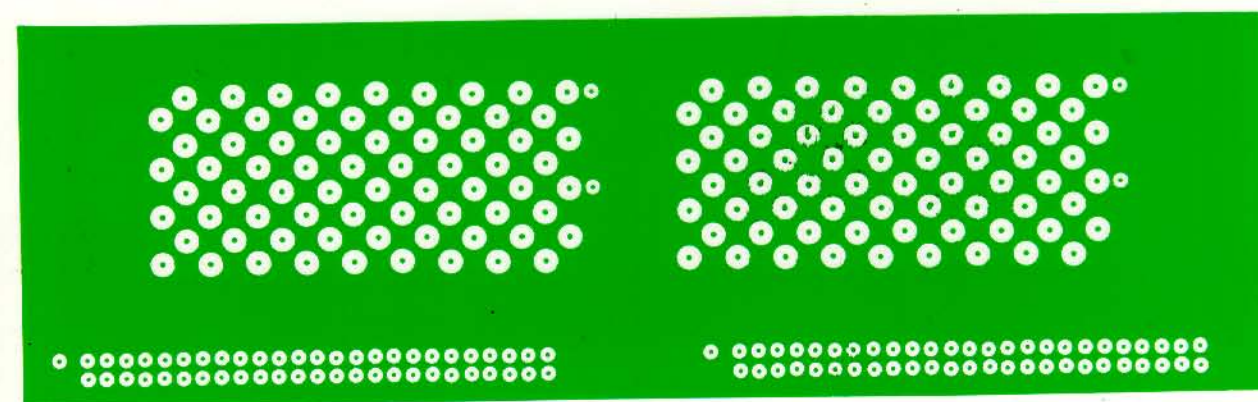
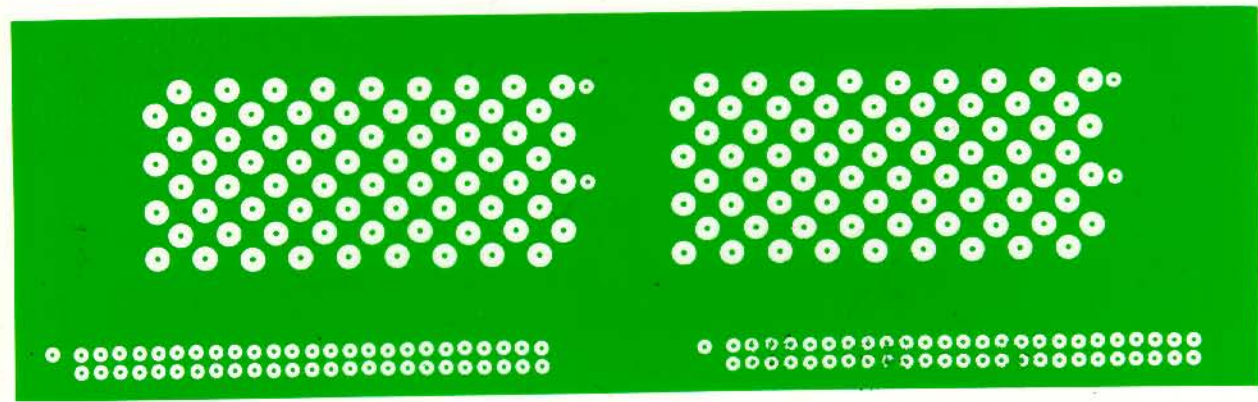
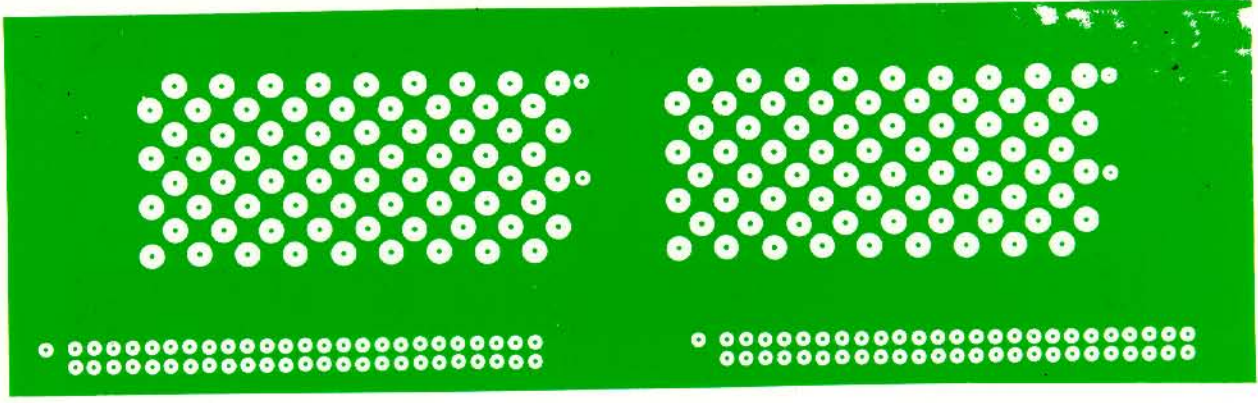








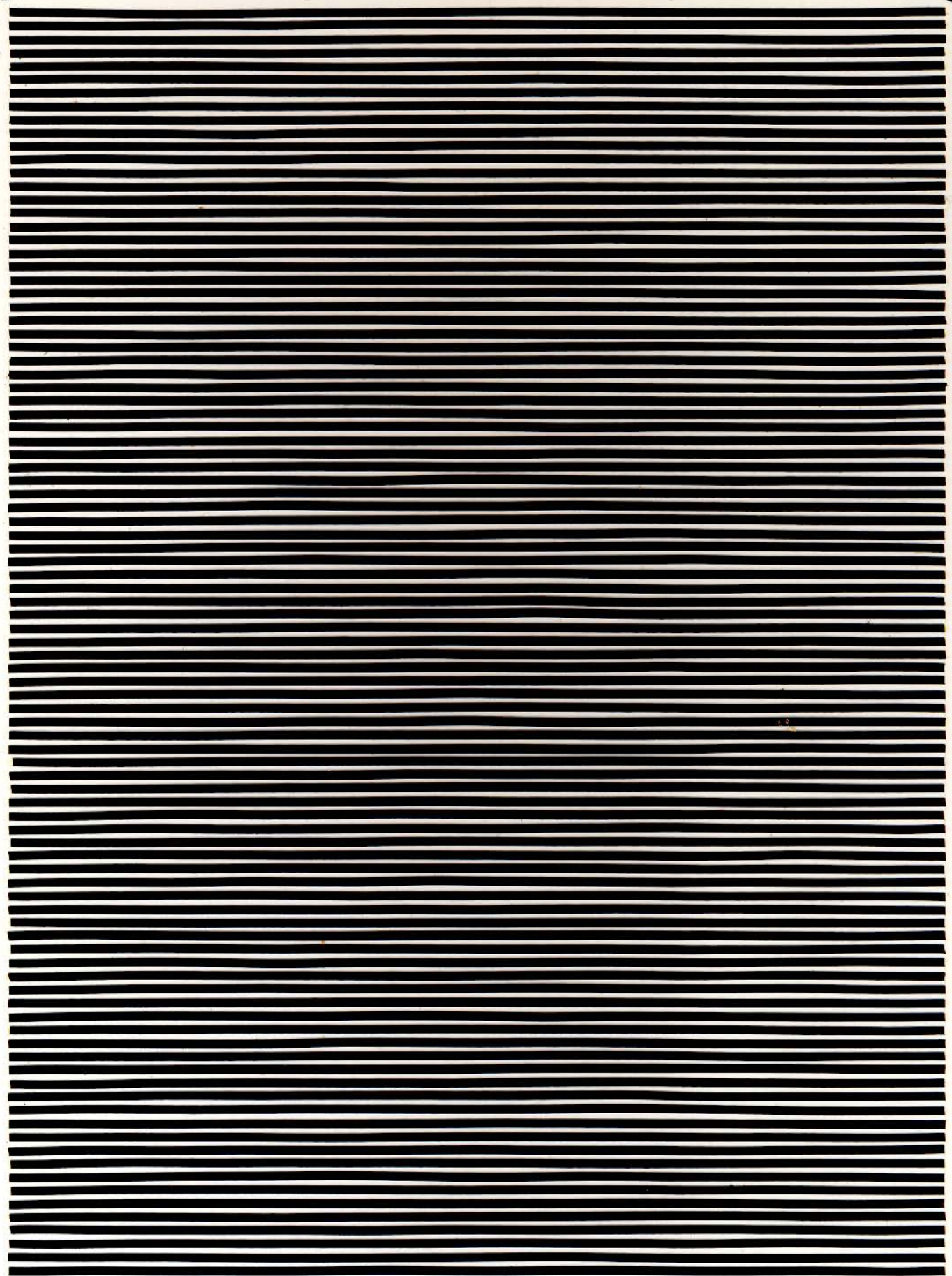
APD
330x87
BDS Data connect



FEED UP
MODEL 914, 720, 420, 2400

NOTES

FEED UP
MODEL 813, 660, 330

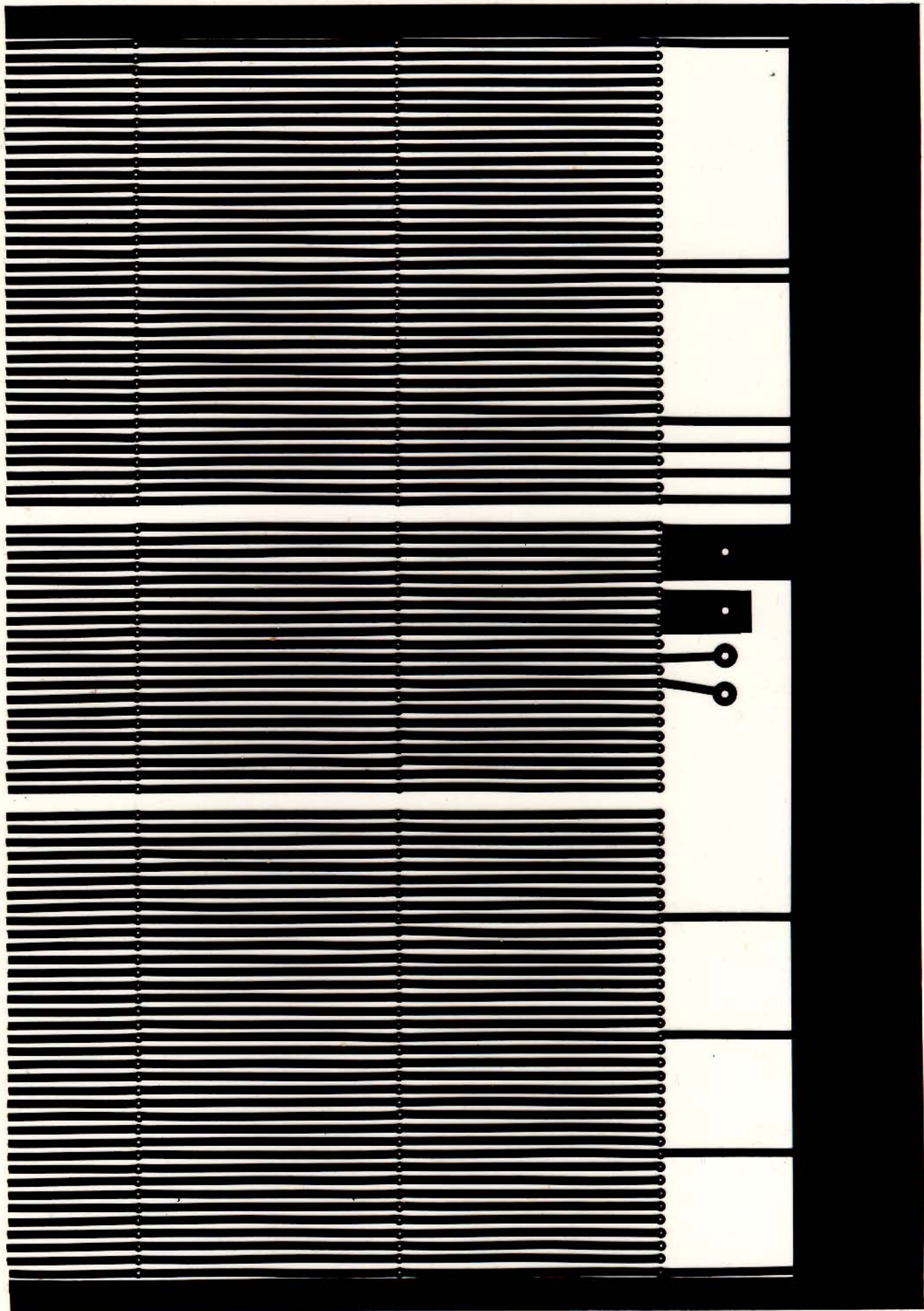


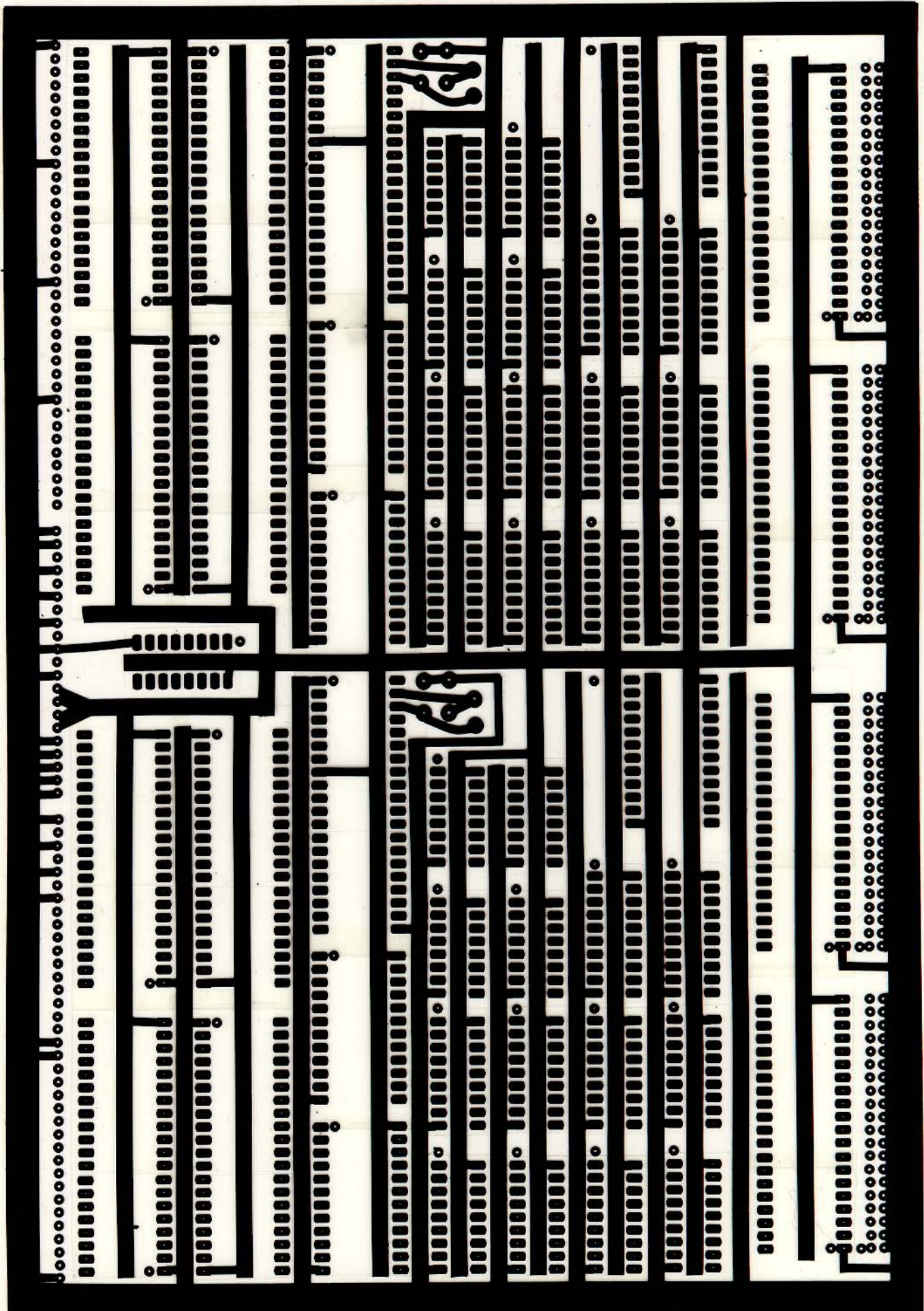
FEED UP
MODEL 914, 720, 420, 2400

NOTES

FEED UP
MODEL 813, 680, 330

A large rectangular area with horizontal ruling lines, intended for handwritten notes. The lines are evenly spaced and cover most of the page's surface. There are four white corner markers (crosses) at the corners of this ruled area.

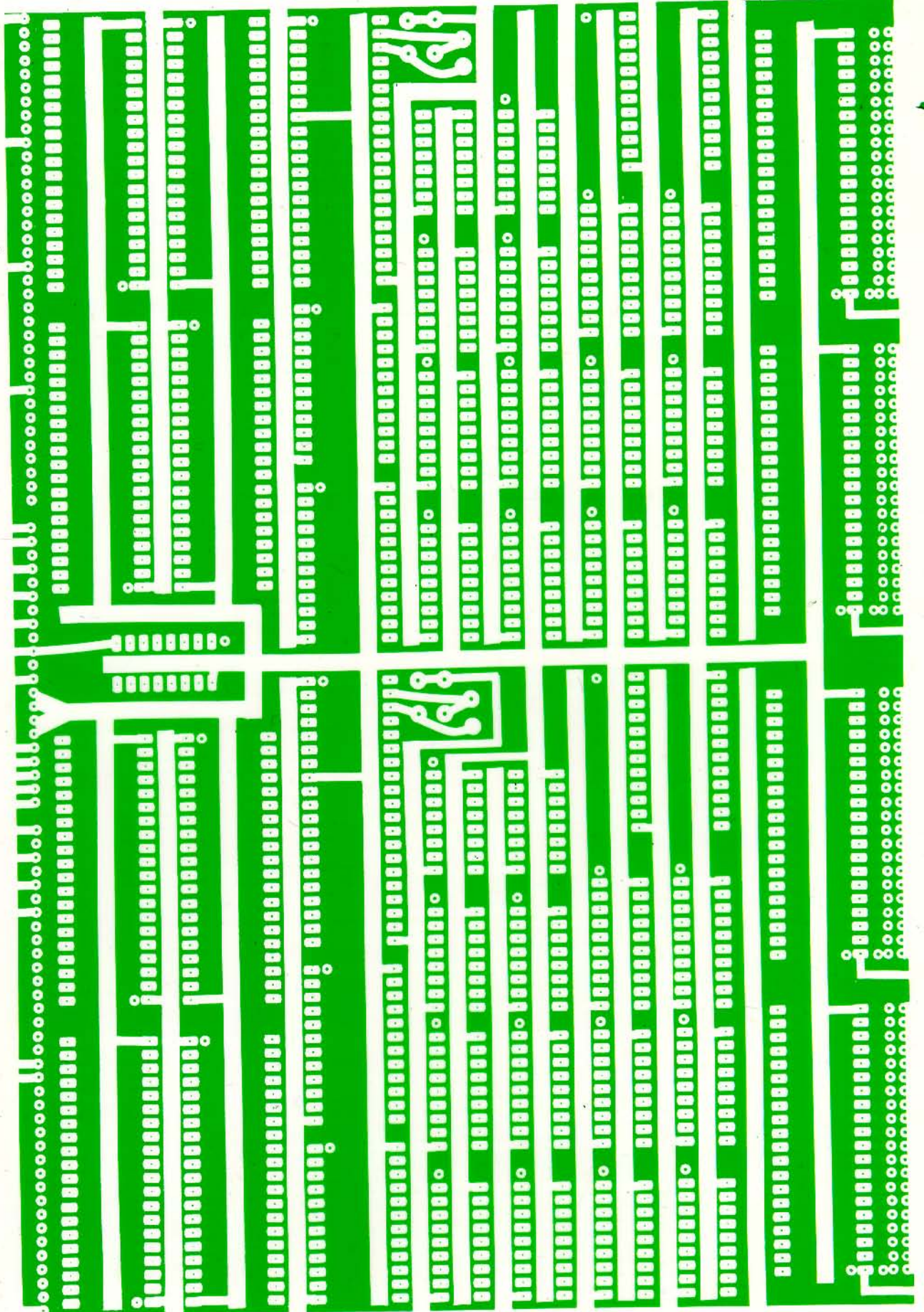




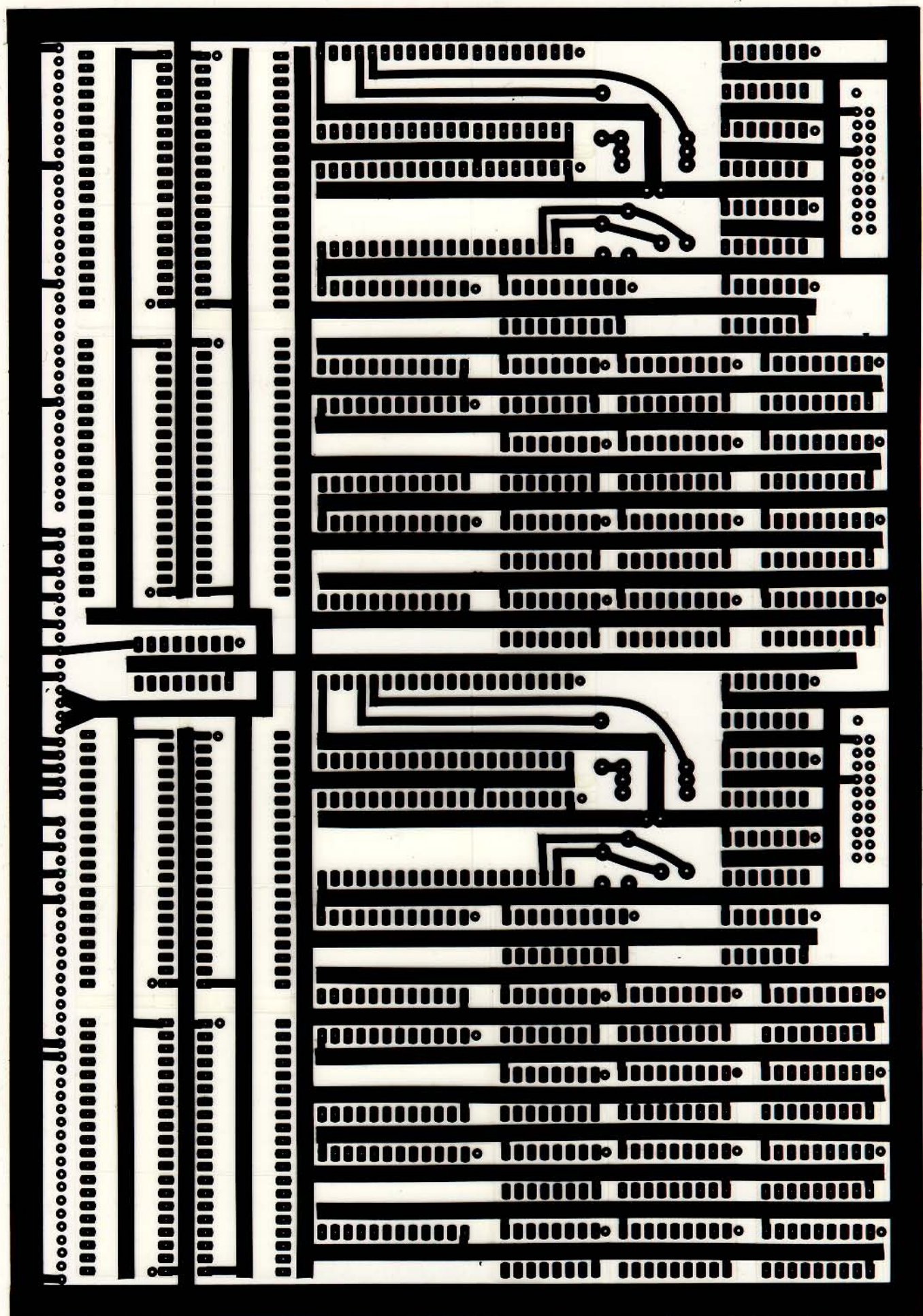
17048 Parallel Port - Programmable
AKS

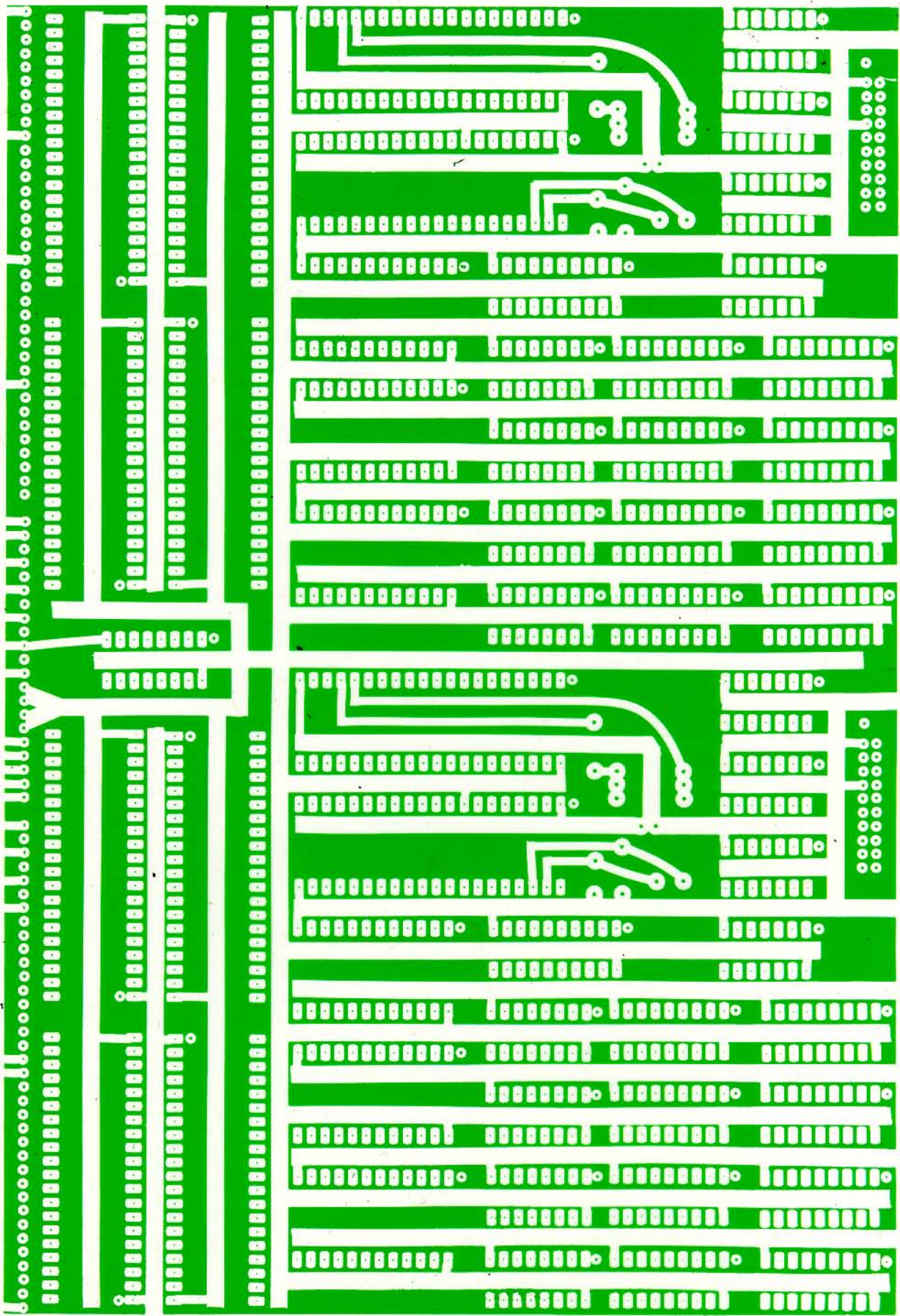
FEED 1 UP
MODEL 813, 669, 300

MODEL 814, 750, 459, 540
FEED 1 UP

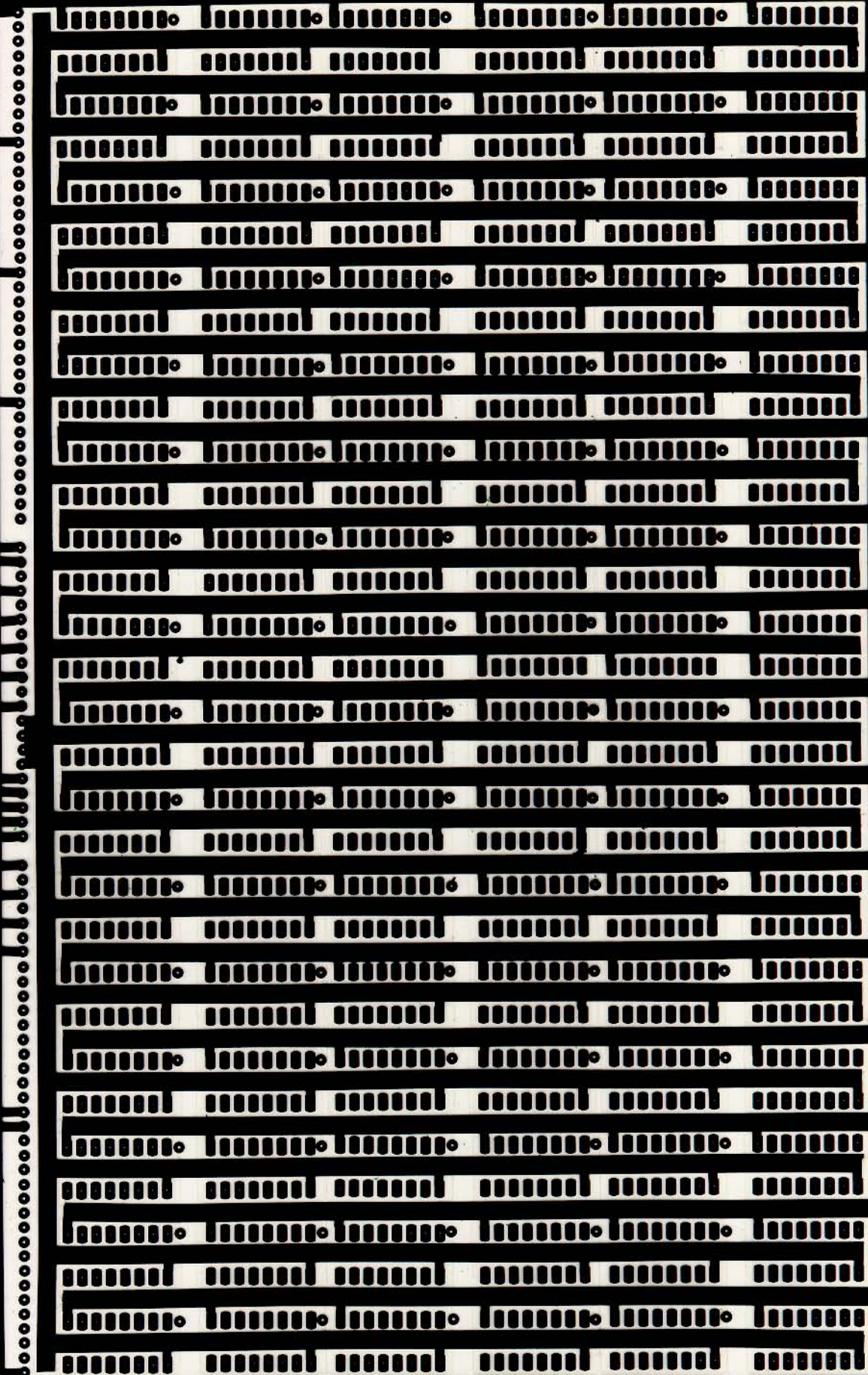


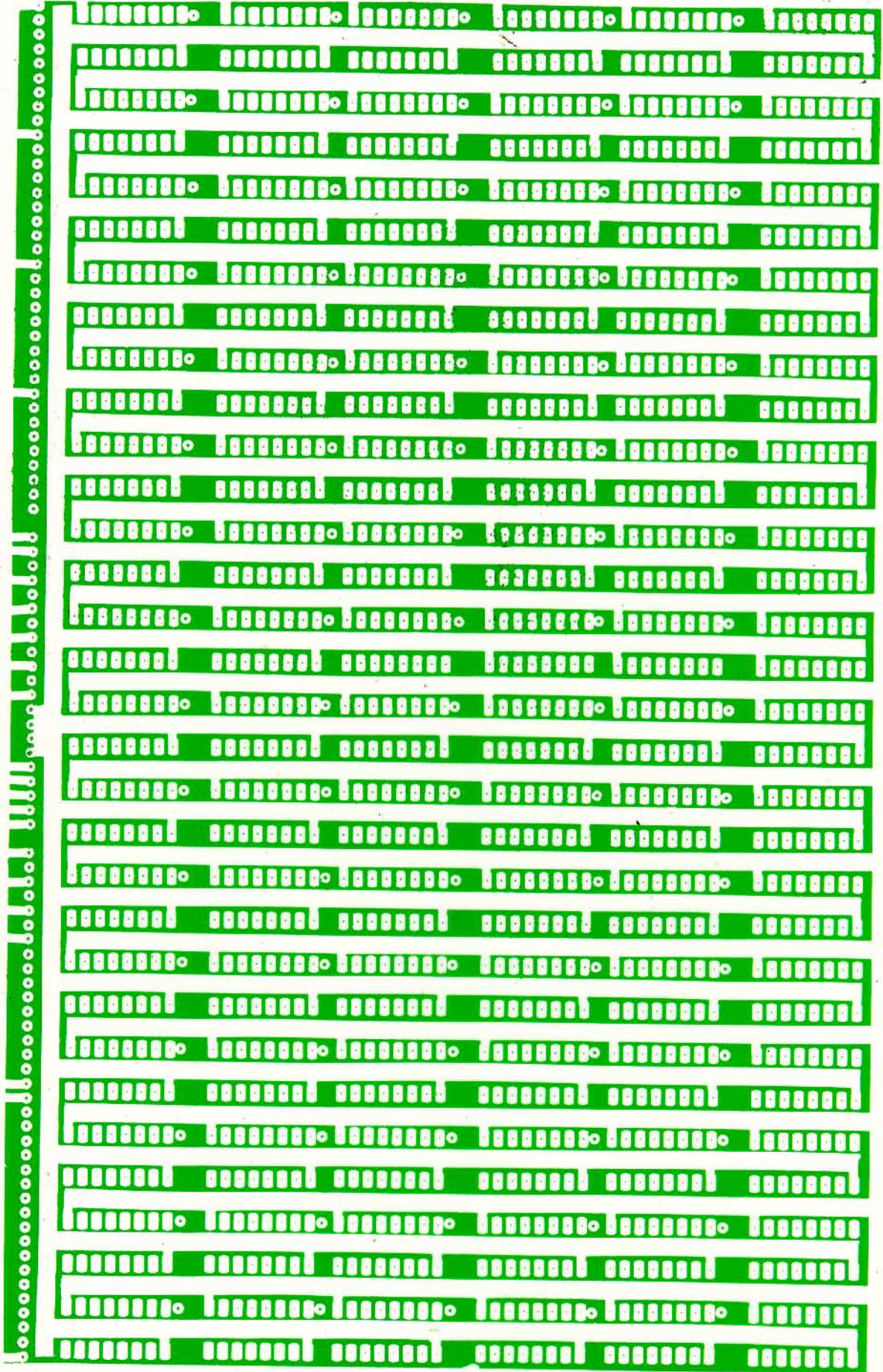
180481
APD
Serial Port - Programmable

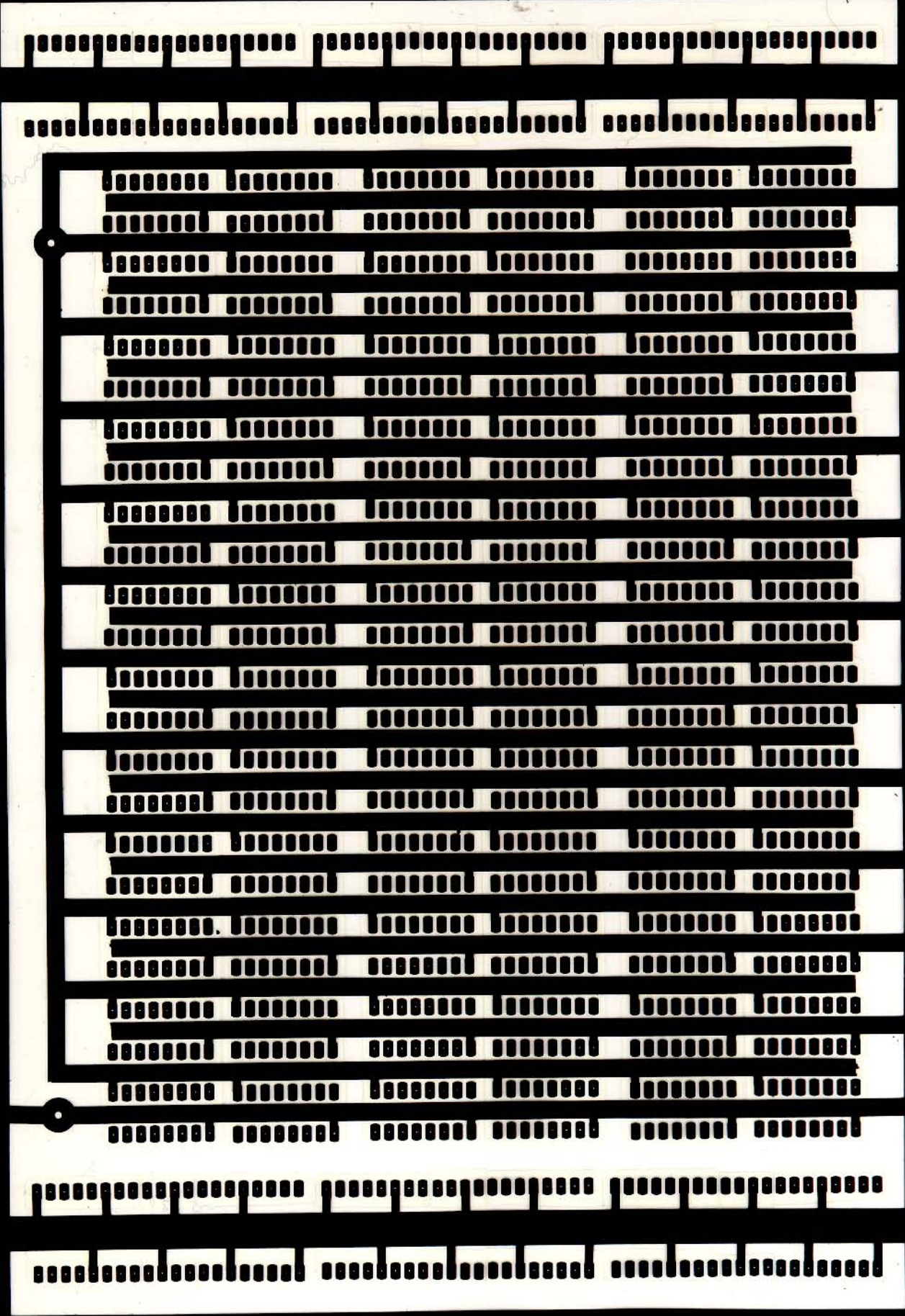




200481
ARD
UNIRUS I/O - Interface







ROM Program Interface
T.P.6 Bulletin Page 77 ARD

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

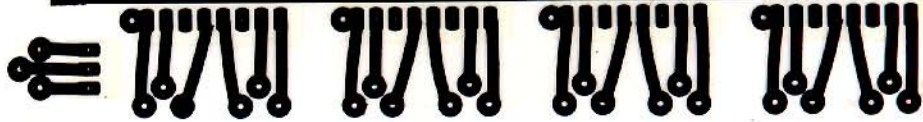
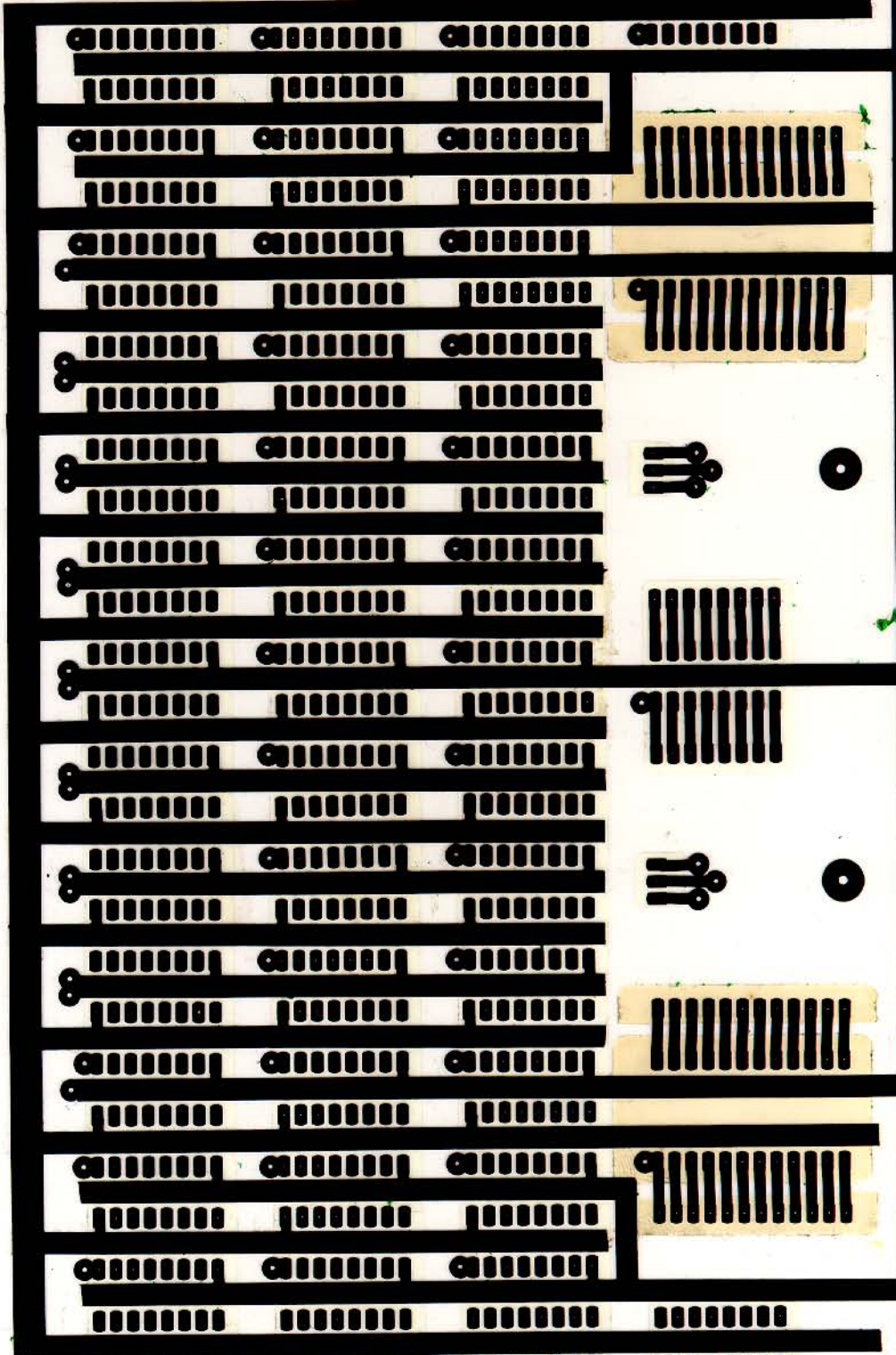
.....

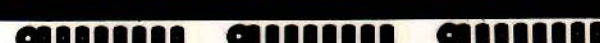
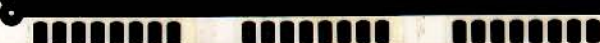
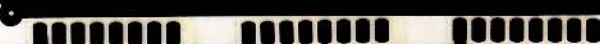
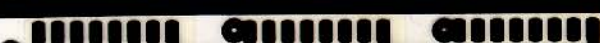
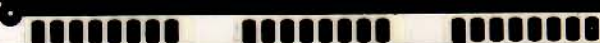
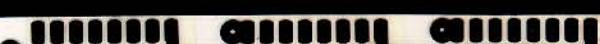
.....

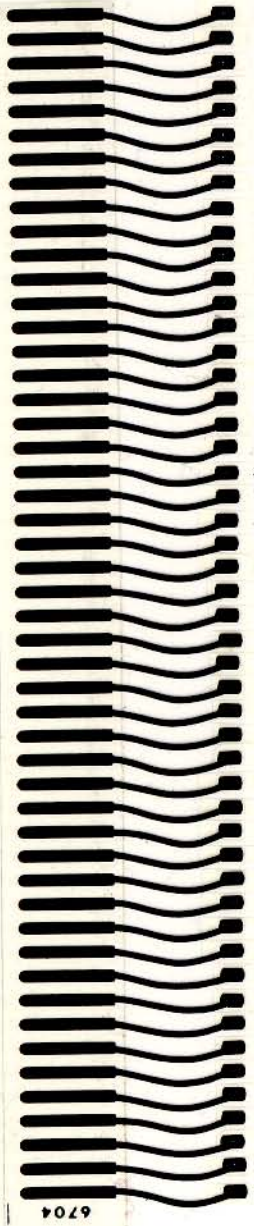
.....

.....

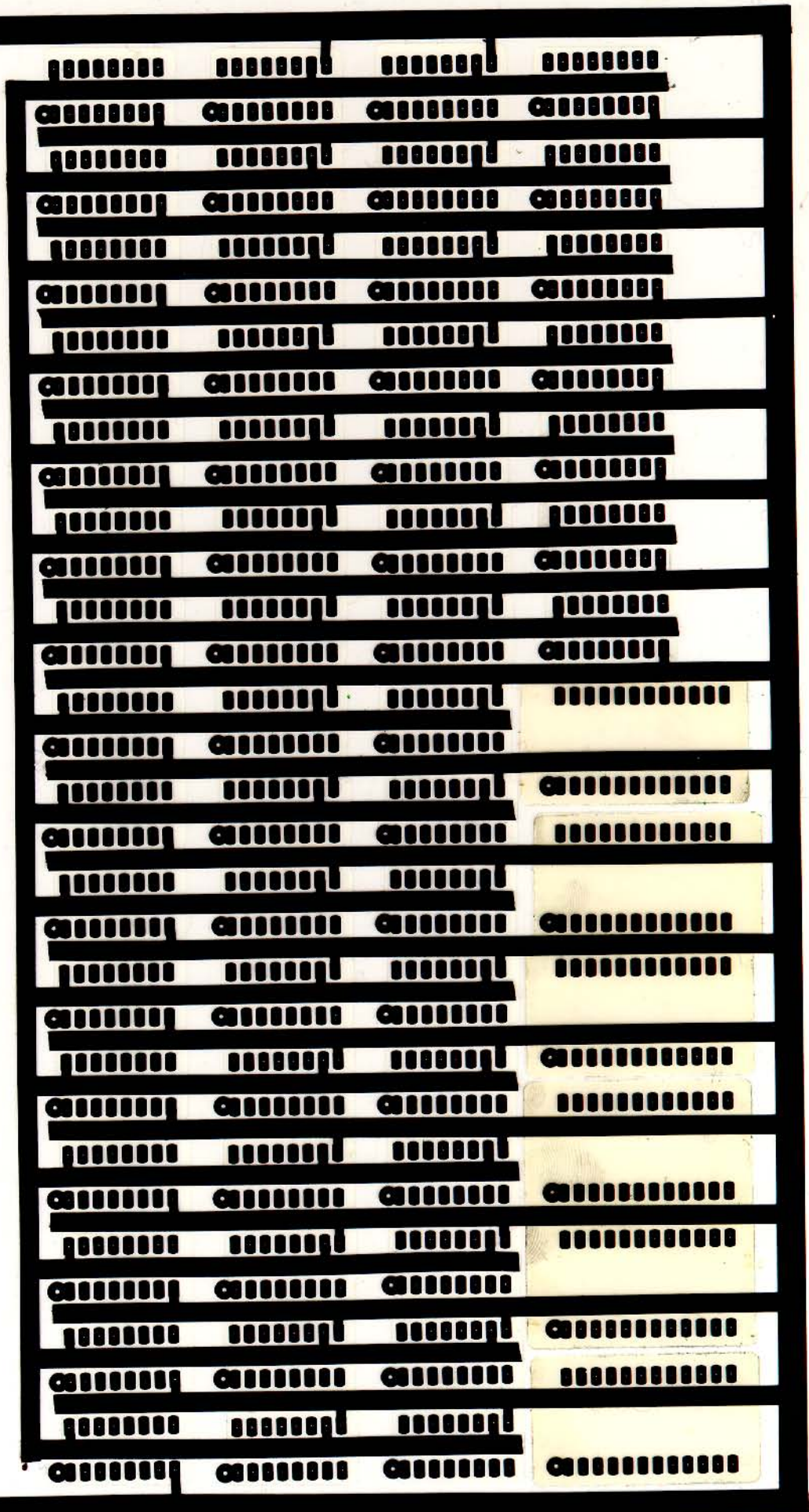
.....

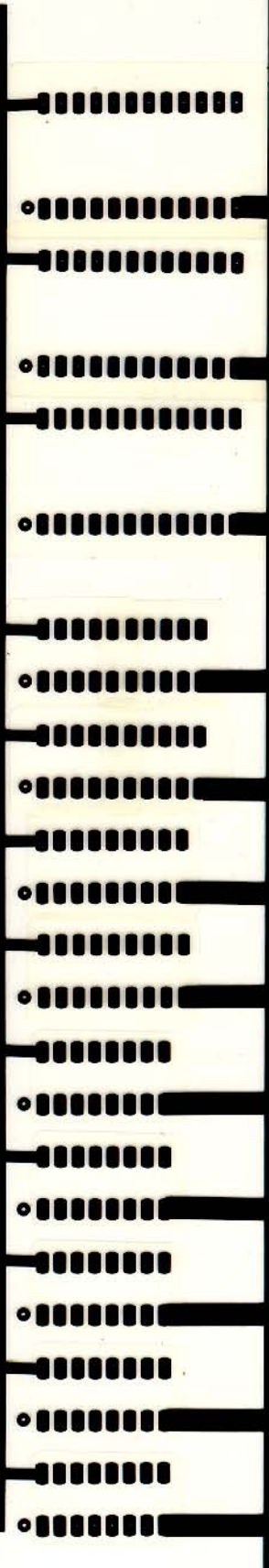
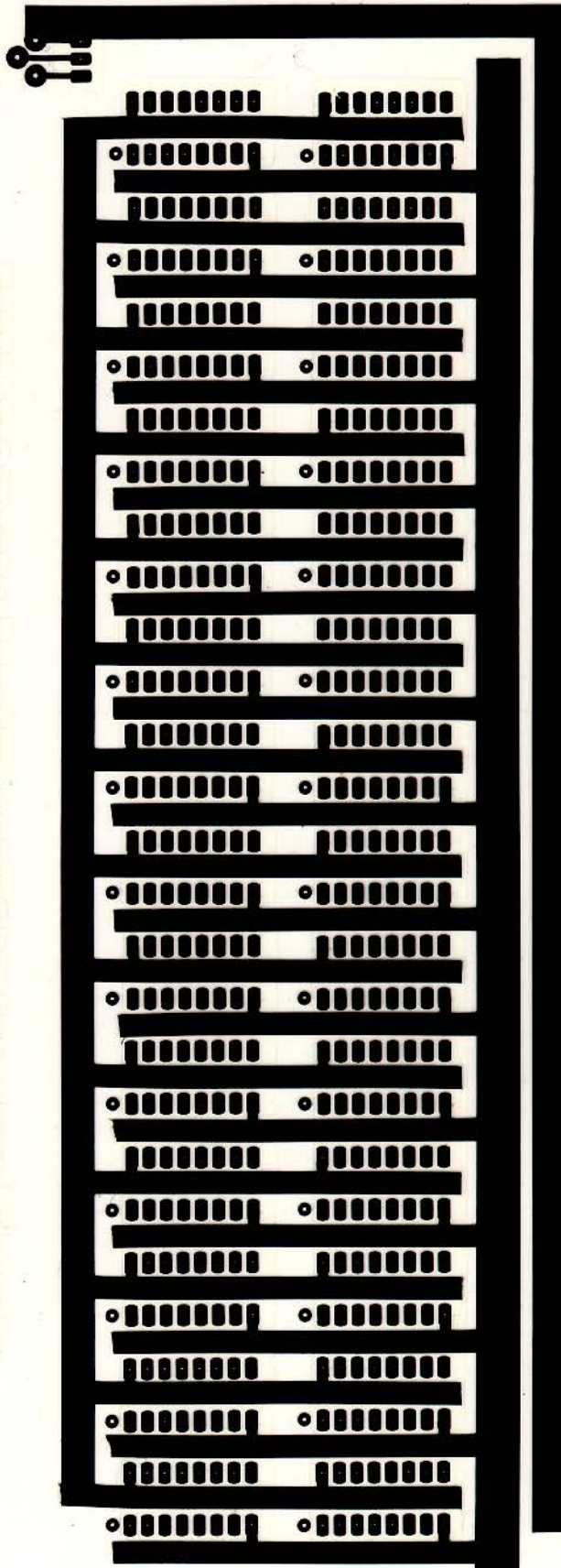
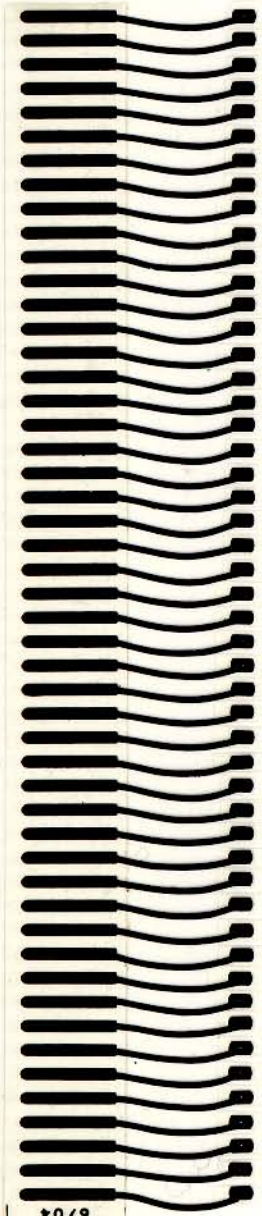


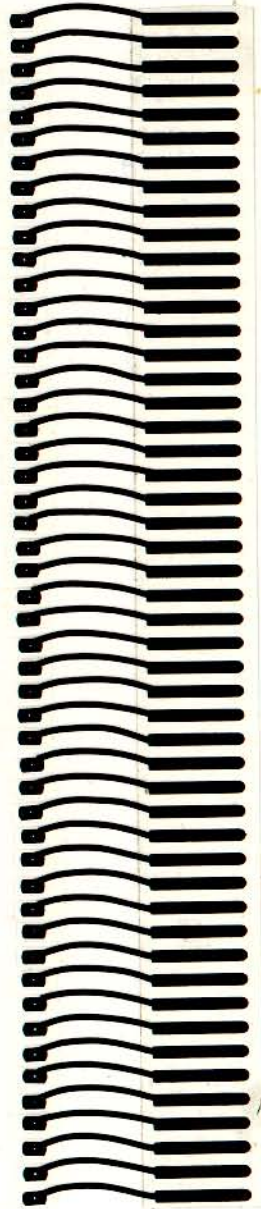
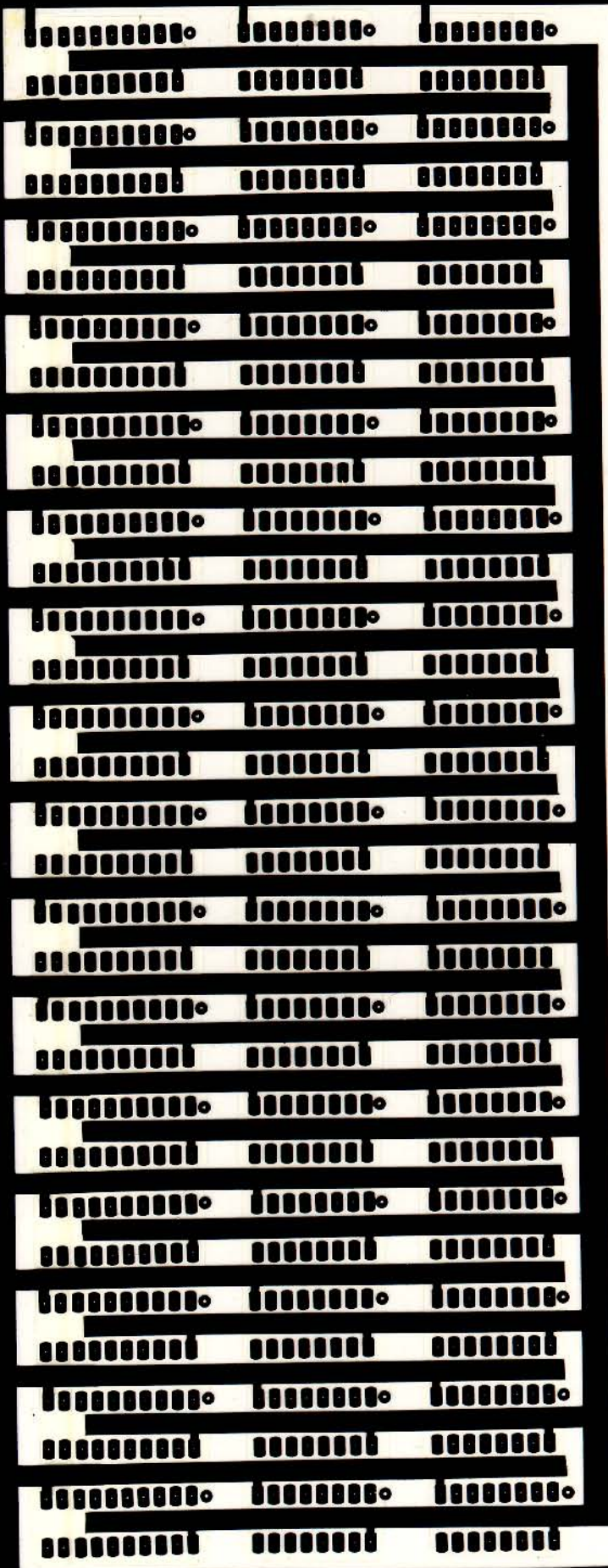
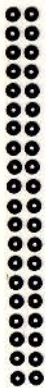
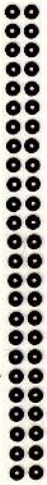


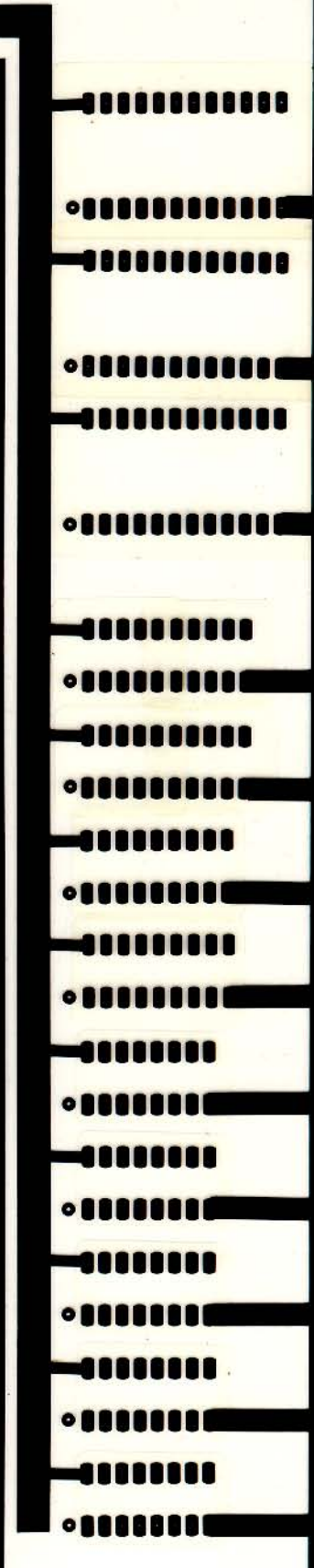
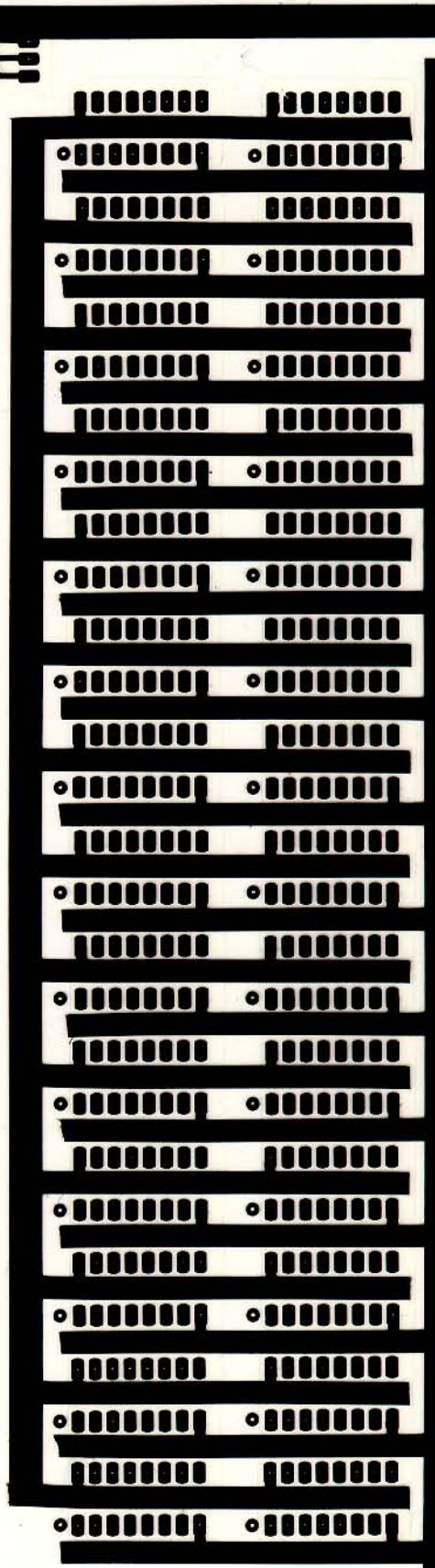
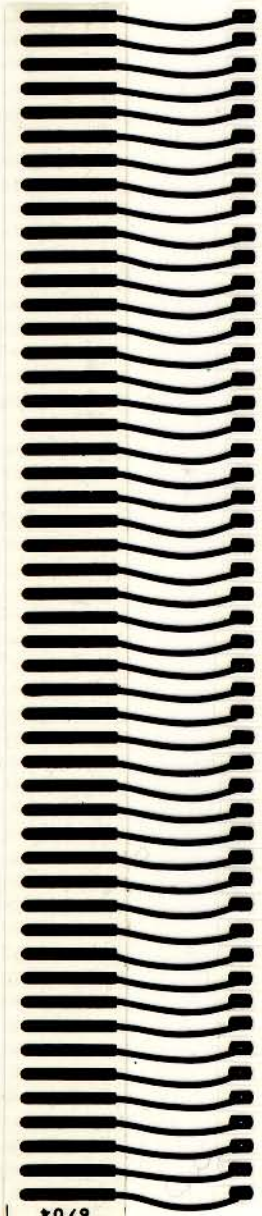


6704

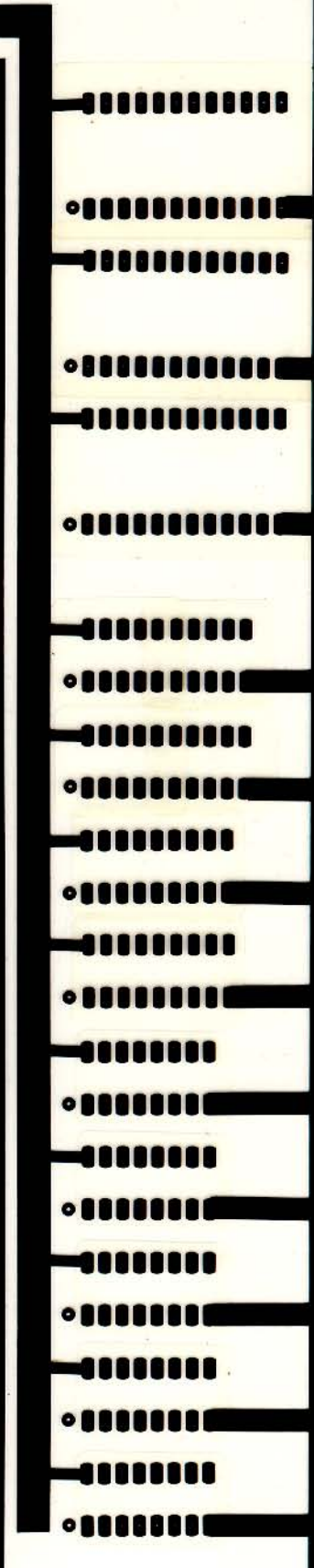
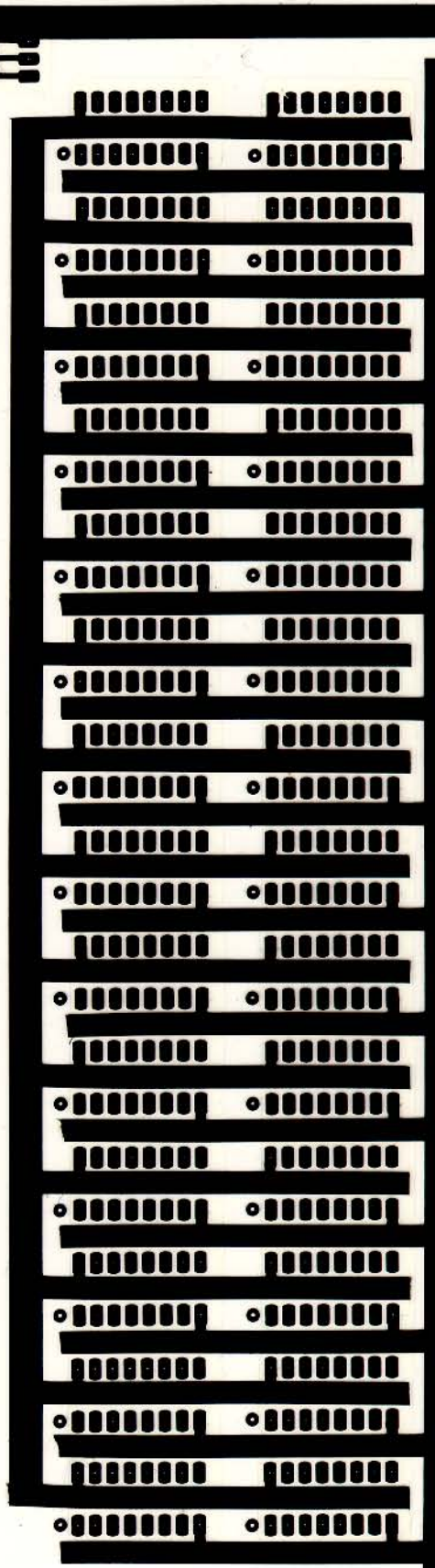
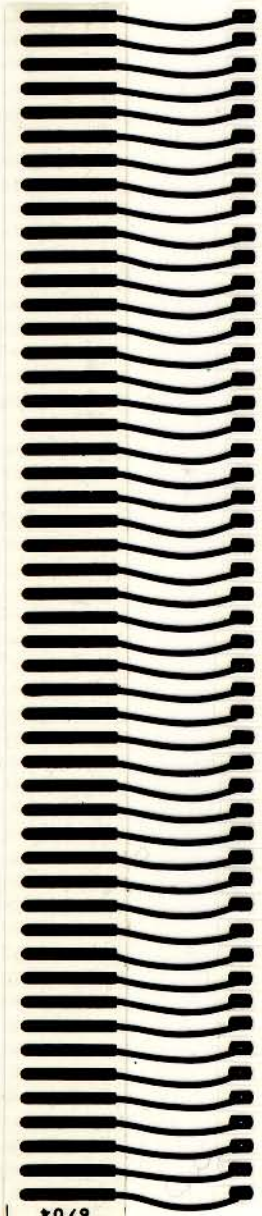




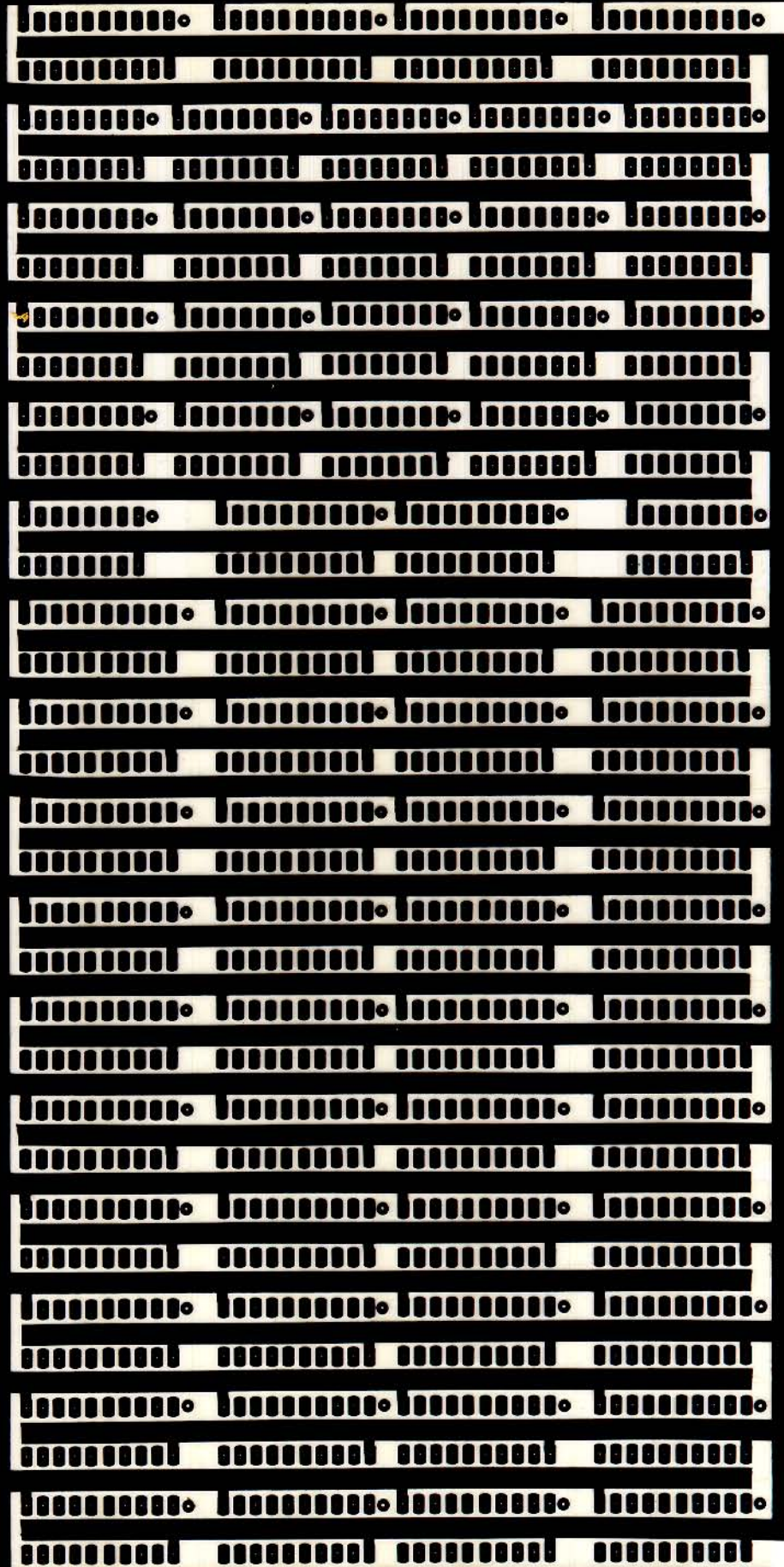




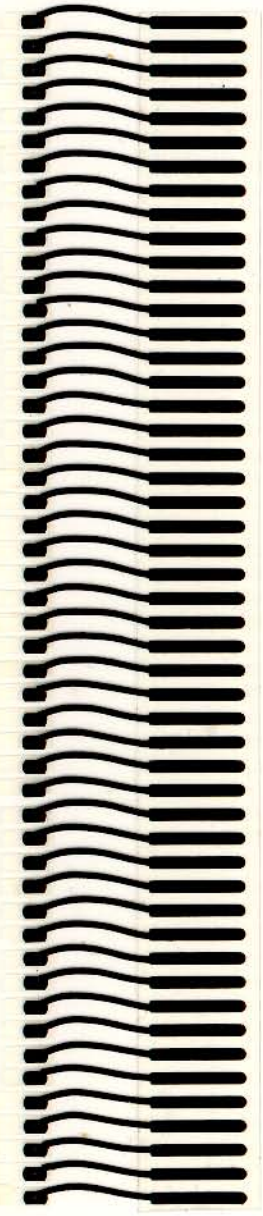
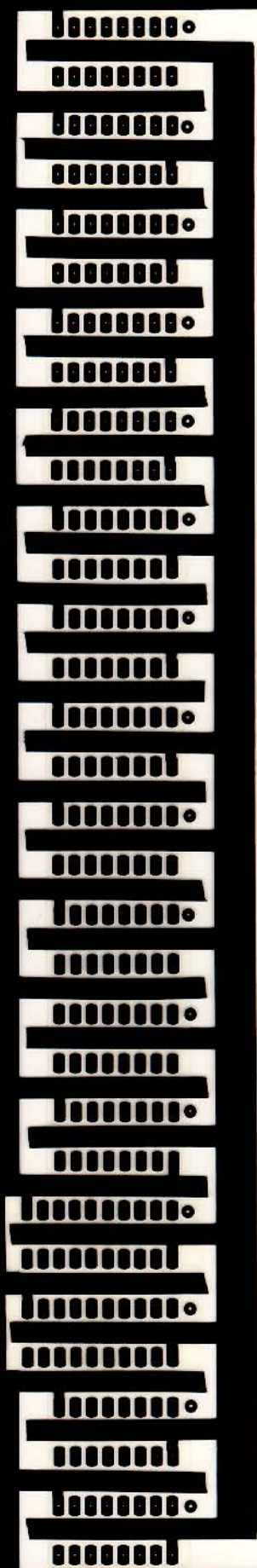
6704



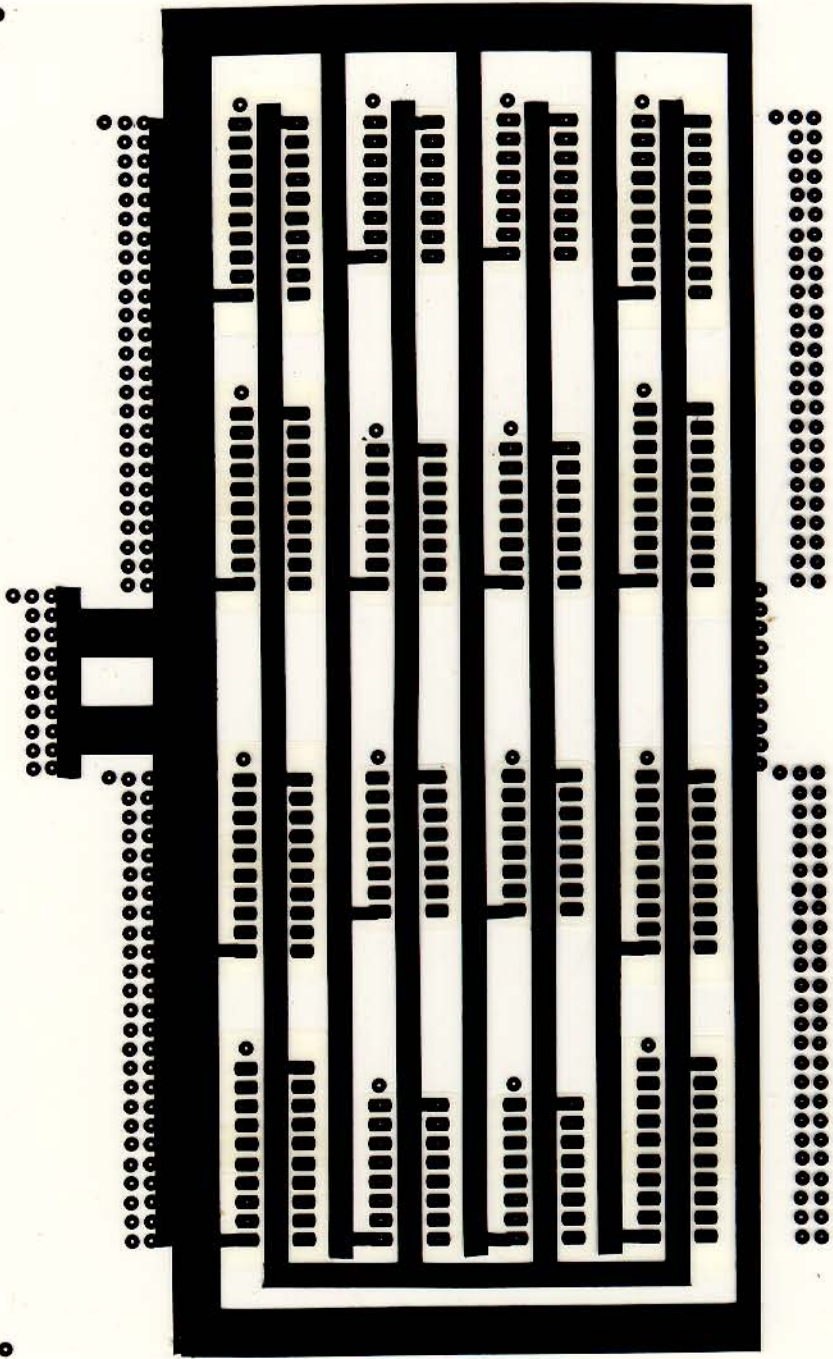
6704



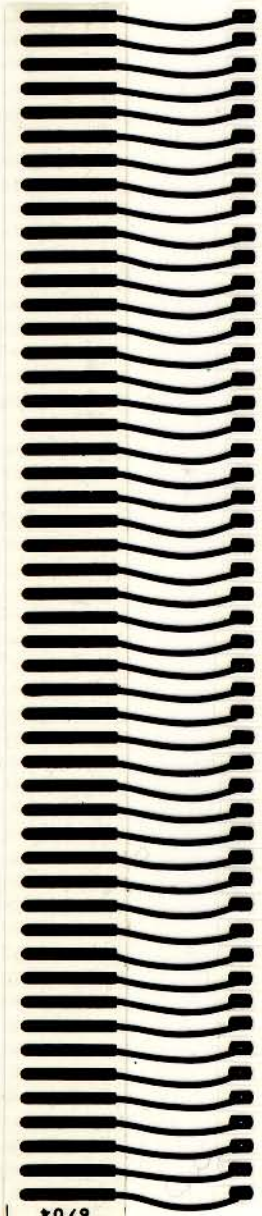
64K0 PRAM
AKO
15 Aug 83



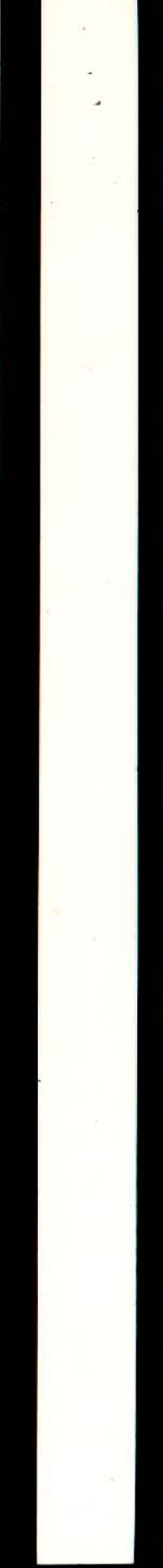
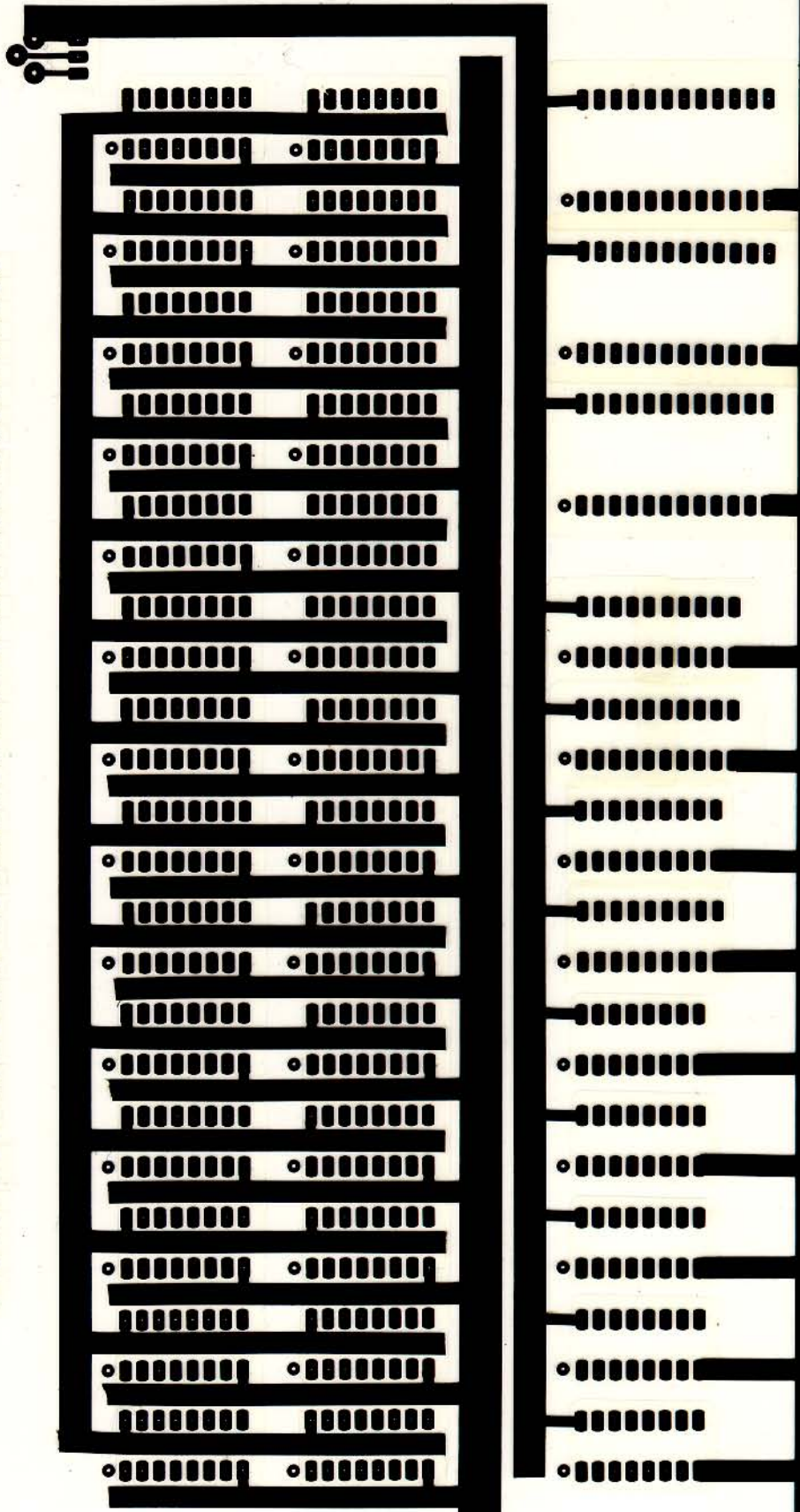
Epson Programm Board AB
 07(16, 33, 37, 69, 118, 256) 14 Aug 83



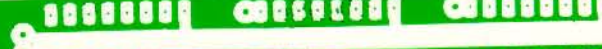
Ground Purpose RAM I/O Buffer
16-Aug-8
JAD



6704

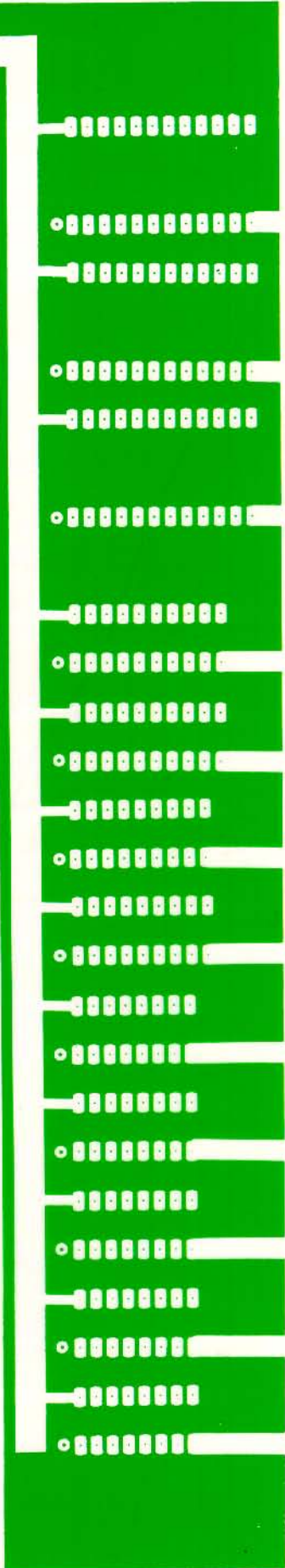
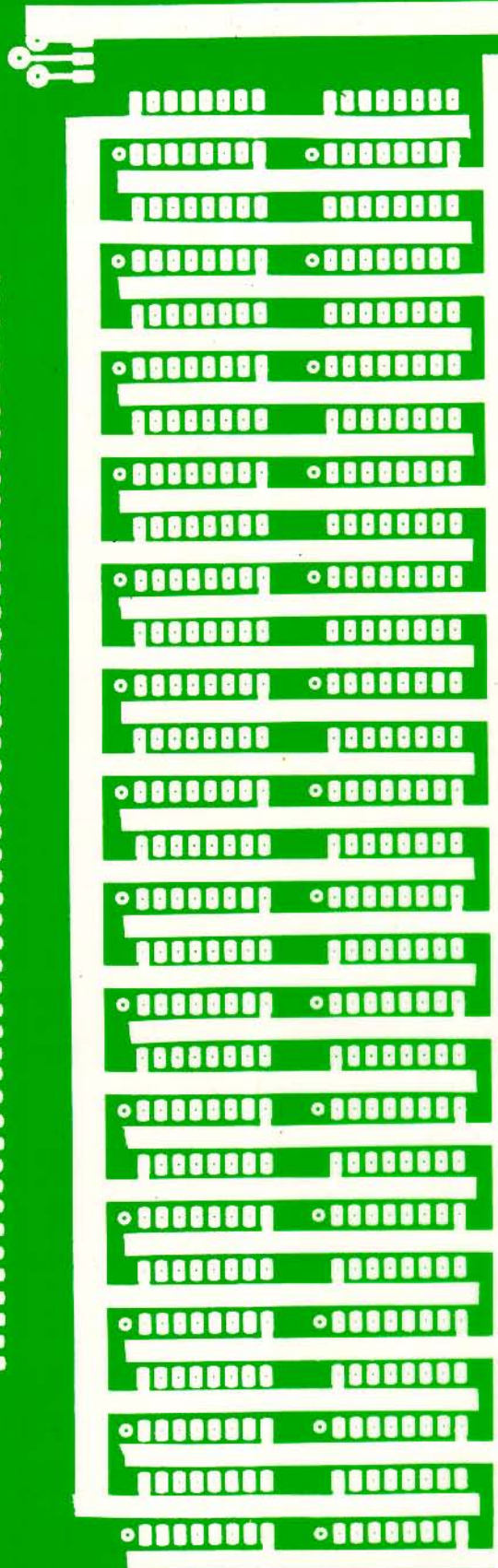


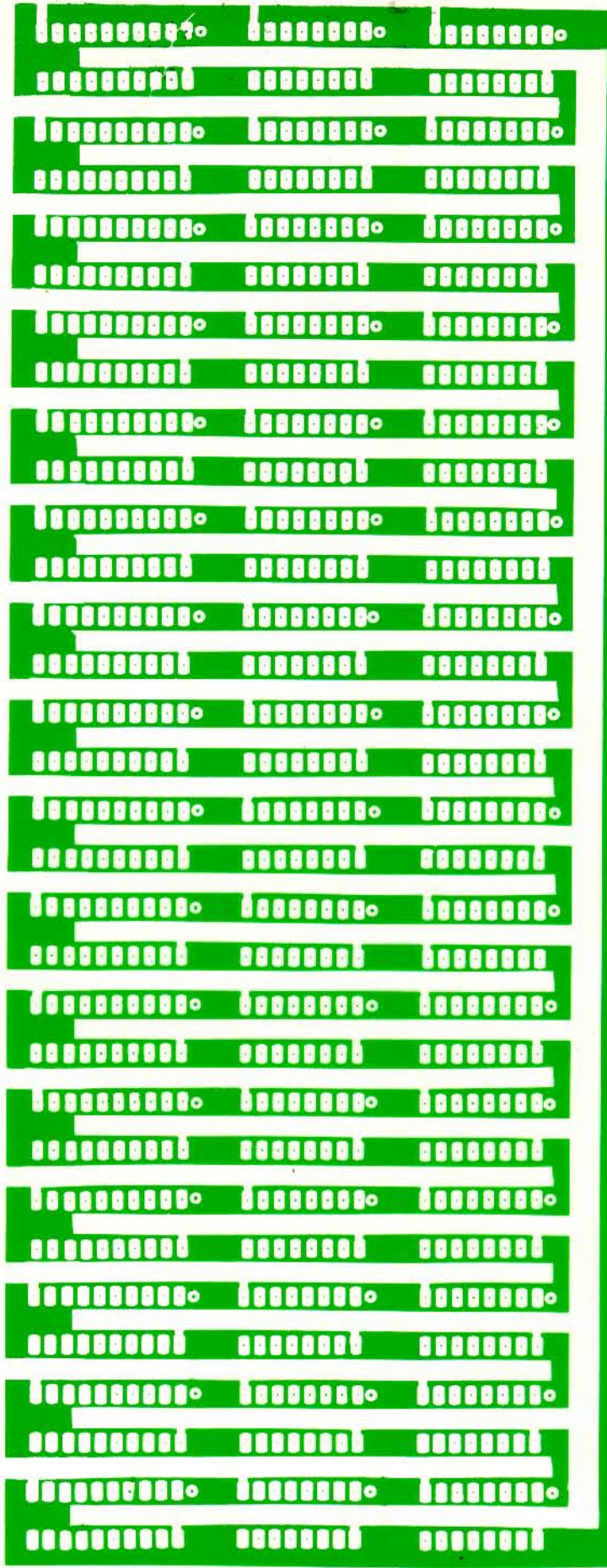






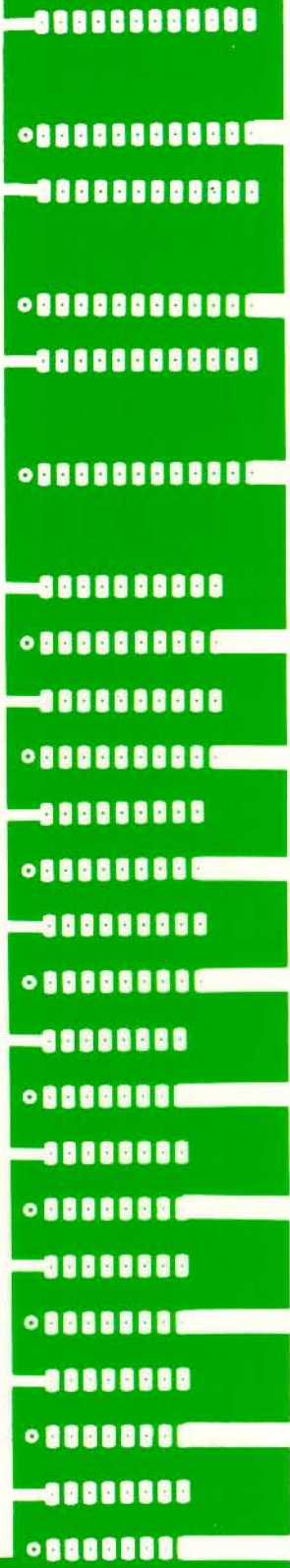
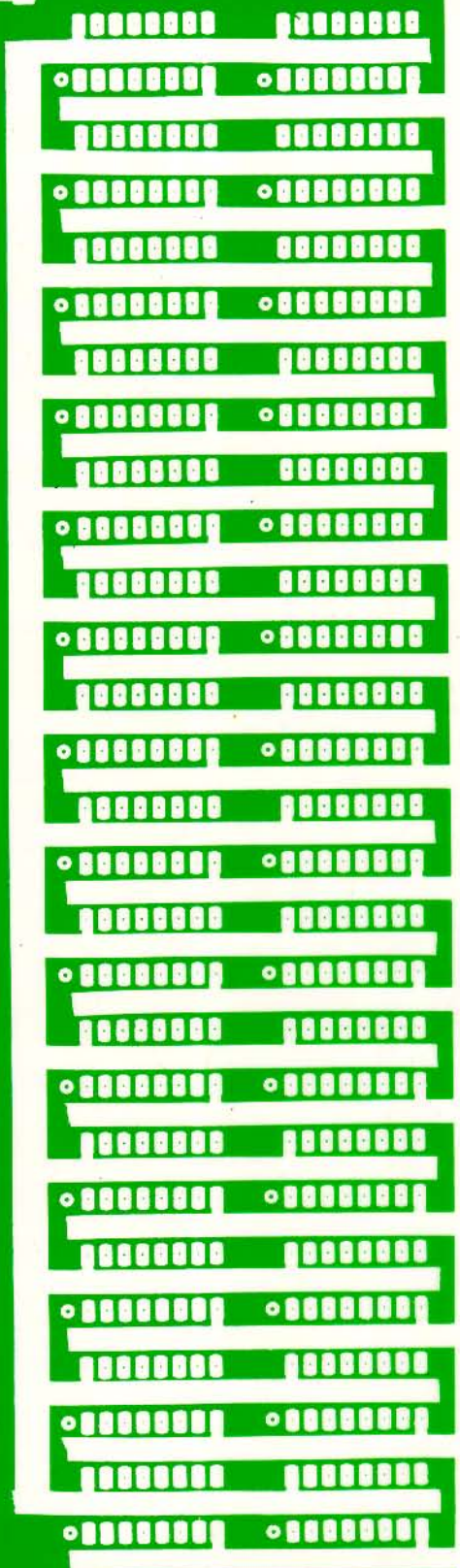
6704





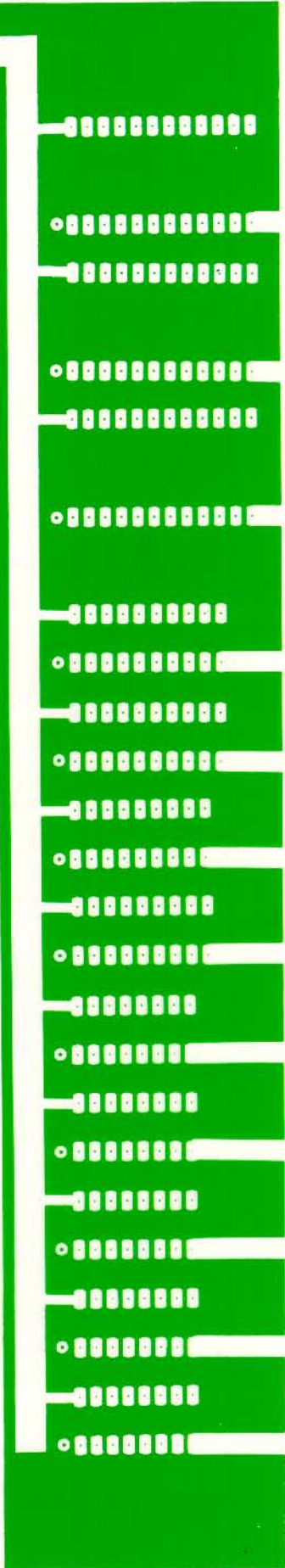
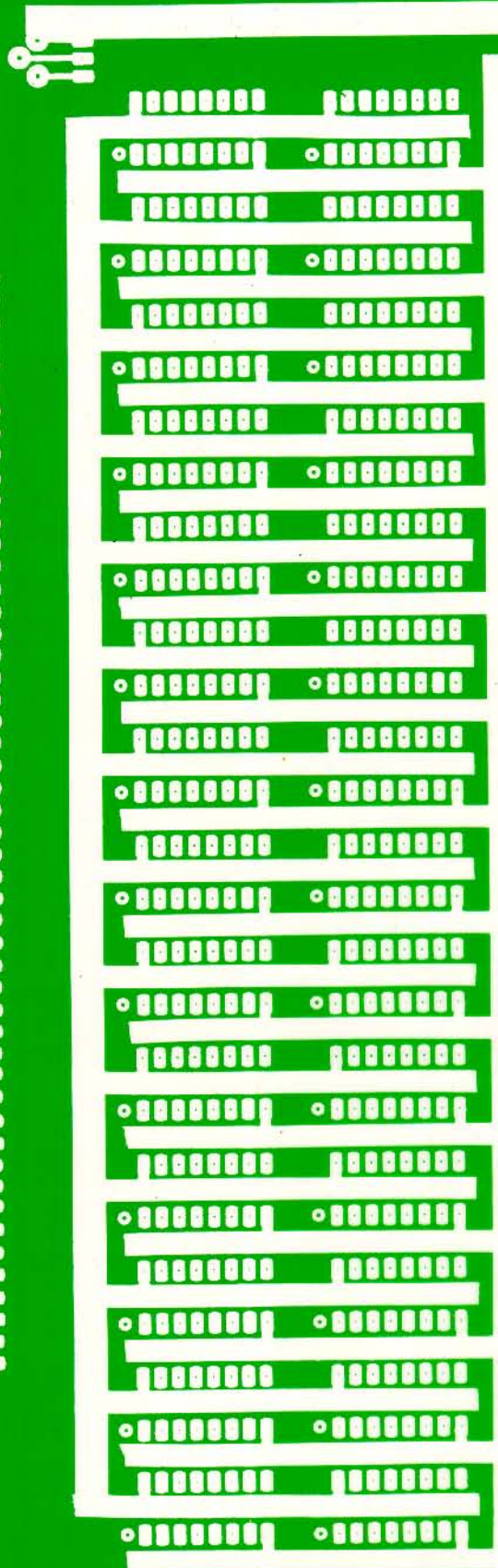


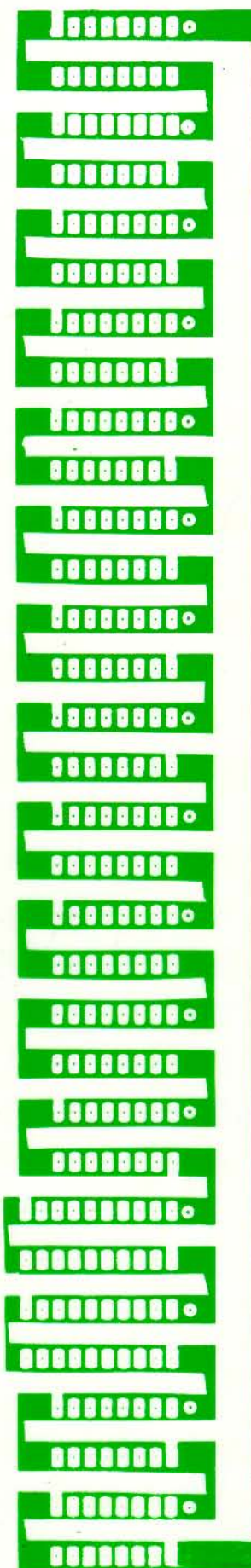
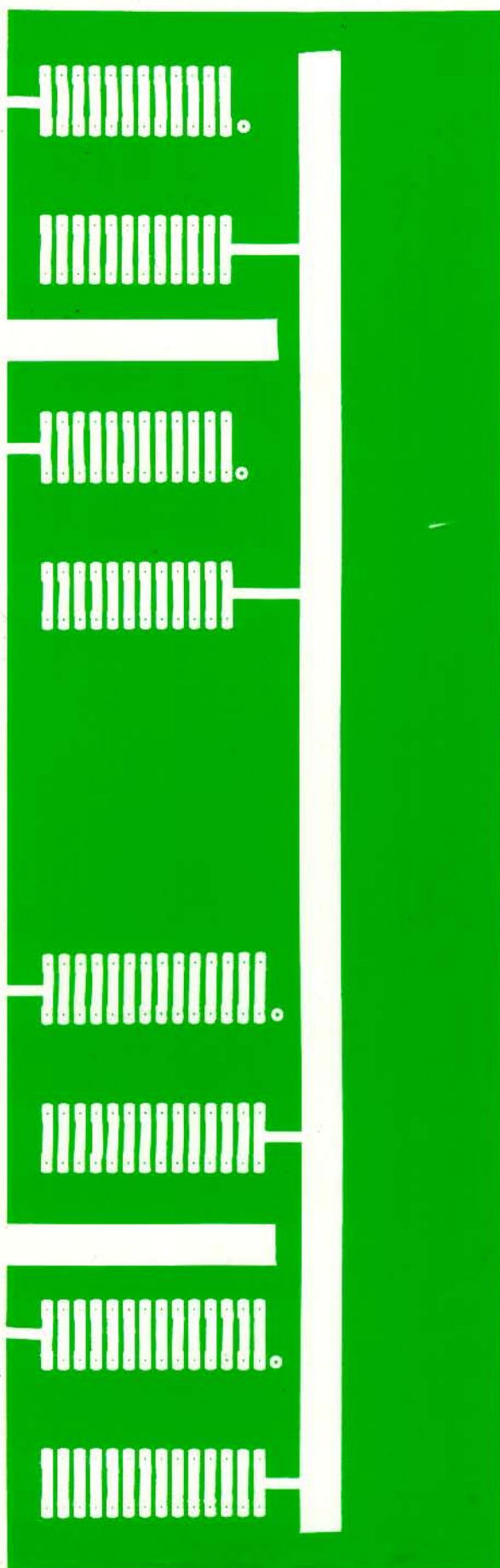
6704

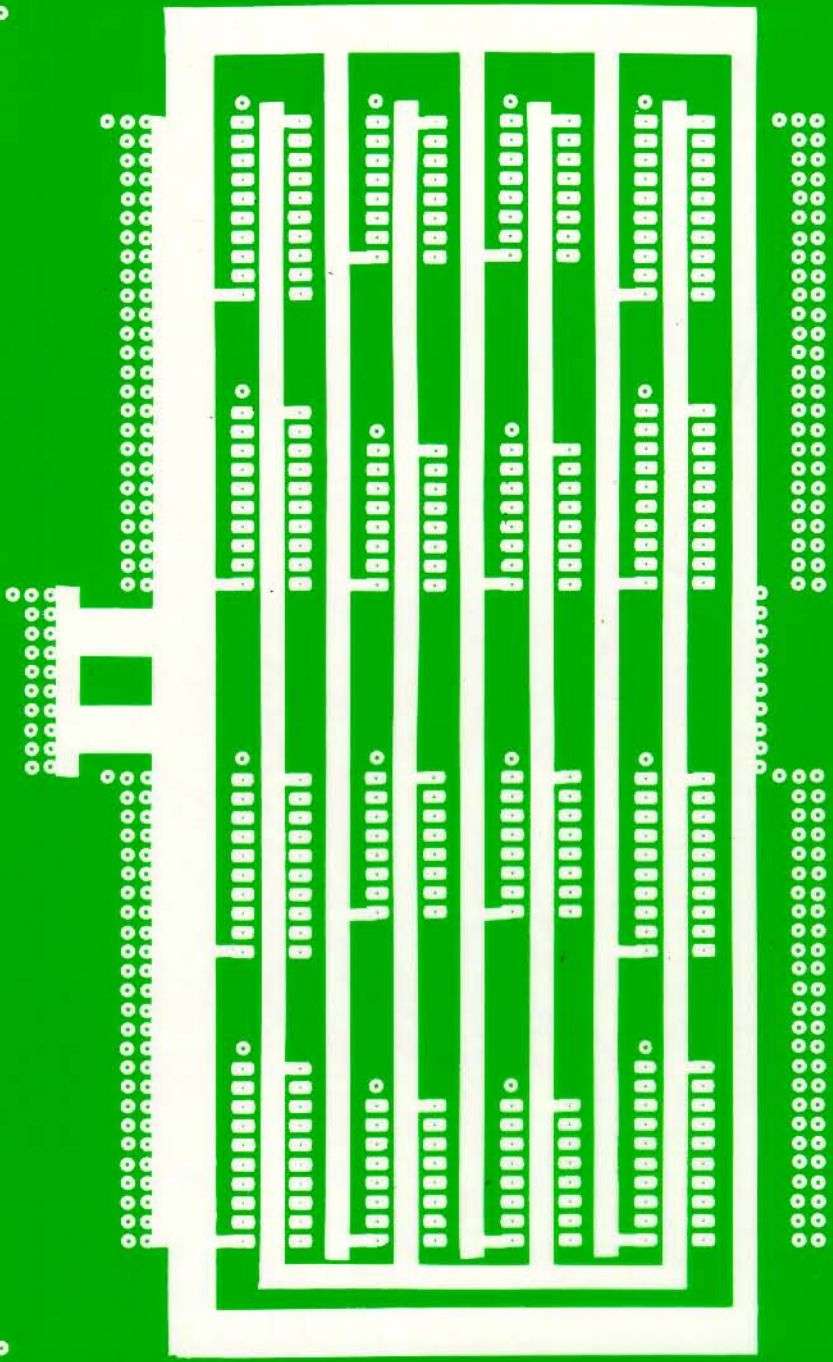




6704









6704

