UNIVAC 9000 SERIES—9200—9300 . . . AND MORE TO COME!

SPERRY RAND

UNIVAC®

9300

SYSTEM

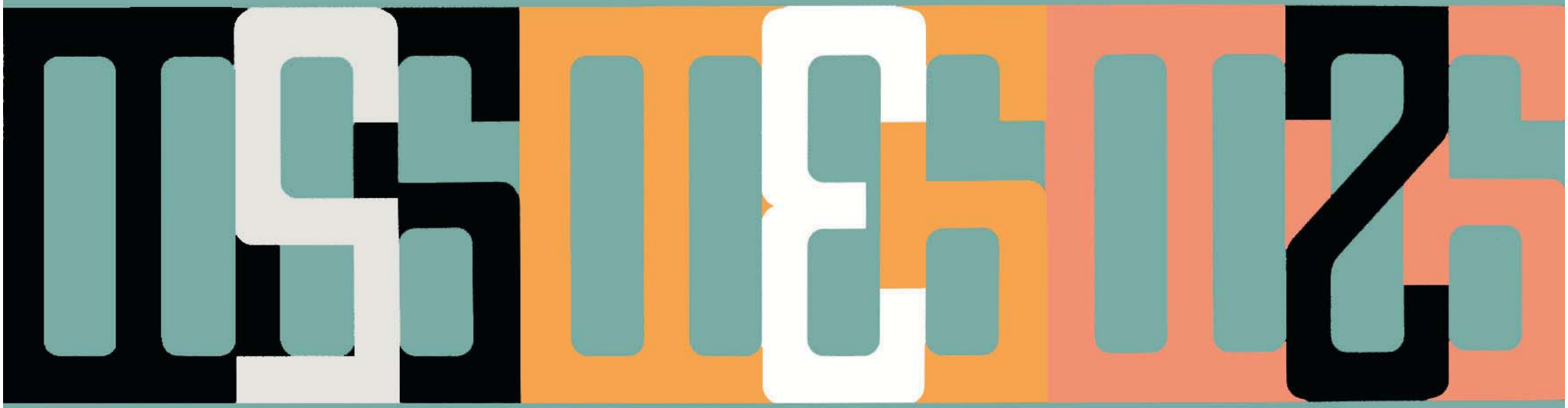
UNIVAC 9000 Series

—A new, compatible computer family with
exclusive plated-wire memory

9200—low cost, internally programmed 80-column card system

9300—high performance 80-column card
and tape system with concurrency

...and the soon to be announced 9500—medium scale system
with multiprogramming and real-time capabilities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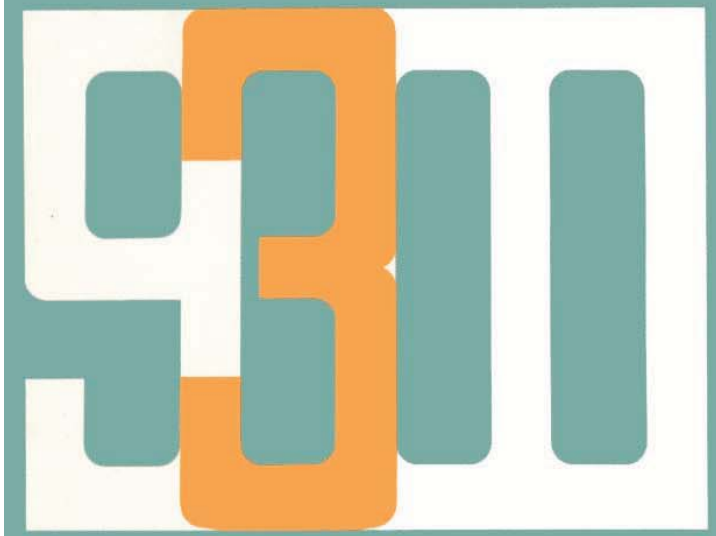

UNIVAC 9300 SYSTEM

- Eliminates the costly gap between punched card and magnetic tape data processing
- Big computer speed, and power at low cost—tape systems start around $3000.
- Completely versatile, the 9300 can be—

...A high performance punched card processor

...A full power magnetic tape system—complete software includes COBOL and FORTRAN

...A high throughput satellite system


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Step up to tape—and profit

The step up from punched card data processing to a magnetic tape computer is always a big one. But now, the UNIVAC 9300 makes it small. The 9300 is a full performance, high throughput tape system available for far less cost than comparable competitive systems.

Perhaps you have a small to medium scale magnetic tape system or have ordered one. If so, compare it with the cost-performance power of the 9300.

Why does the UNIVAC 9300 put competitive systems to shame? Because Univac engineering has produced big computer speed and power at small computer prices. Plated-wire memories, monolithic integrated circuits, and production techniques perfected by the pioneer in computer manufacturing have produced this remarkable system.

The UNIVAC 9300 isn't only a magnetic tape system. It is a very high performance card processor—at a very low cost. Either way, it is equally well suited as the hub of a management information system for the medium size organization.

Nothing like the 9300 System has ever been produced. And it is just one of the series of compatible systems. It's an inexpensive step up from the 9200, and an inexpensive step away from the 9500. The considerable investment in current programs and file organization need not be sacrificed when moving up since programs can be utilized on other 9000 models.

Take a serious look at the 9300. No matter what the size or nature of your data processing needs—you can't afford to ignore it.

System synopsis

The UNIVAC 9300 is a high speed card and magnetic tape processing system with high speed printer output. The computer itself is extremely fast; the entire memory cycle time is 600 nanoseconds. Plated-wire memory starts at 8,192 bytes and is expansible to 32,768 bytes. (Each byte can hold two numeric or one alphabetic character.)

As a magnetic tape system for sort merging, the 9300 starts at three tape drives and can be expanded to sixteen. The effective tape read or write speed is 34,160 to 68,320 characters per second, depending on the proportion of alphabetic to numeric data. A large percentage of tape reading or writing time is shared with processing, thus increasing throughput power. Simultaneous read and write with processing is achieved by using dual tape control units. Other basic input-output capabilities are:

Card reading—80-column cards at 600 cards per minute. If read-punch feature is used, a second file can be read concurrently at 200 cards per minute by the card punch.

Card punching—80-column cards at 75—200 cards per minute.

Printing—600 alphanumeric lines per minute (63 character font).

All-numeric printing can be done at 1,200 lines per minute (16 character font). Removable type bars provide complete printing versatility by permitting specialized type fonts to be used. For faster card reading and punching the following equipment is available:

Card reading—at rates up to 1,000/2,000 cards per minute with UNIVAC 1001 Card Controller.

Card punching—200 card per minute constant-speed punch and read-punch.

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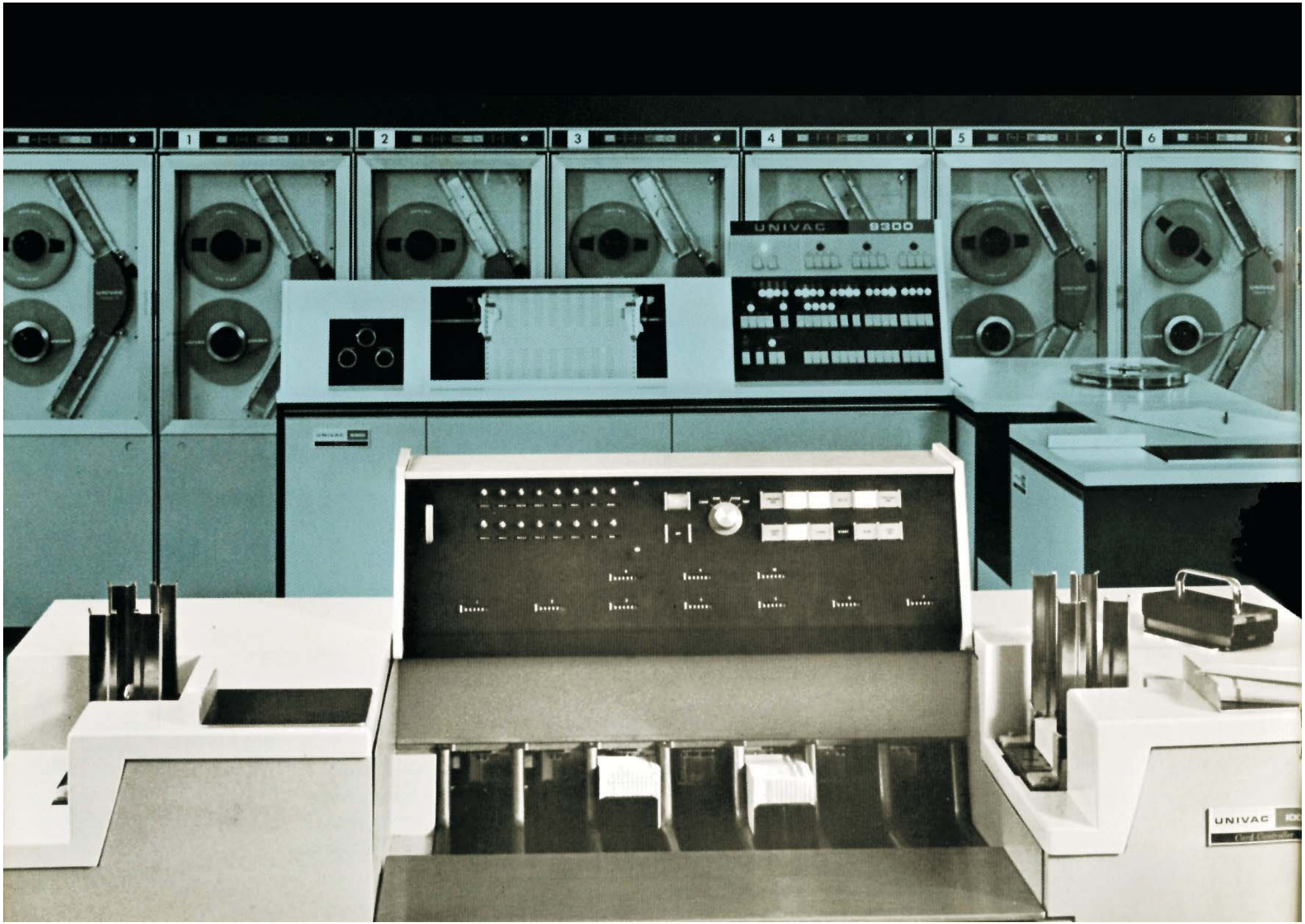
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UNIVAC 9300
UNIVAC

As a high powered card system the 9300 can operate with an on-line UNIVAC 1001 Card Controller, providing added card processing power and flexibility. The combination will allow reading from as many as four separate files at speeds over 2,000 cards per minute. This 9300/1001 combination can do the job of seven different punched card machines: accounting machine, calculator, collator, sorter, reproducer, card proving machine and summary punch, while serving, of course, as a versatile computer system.

The system is extremely compact—it is designed for operating ease and efficiency. The use of monolithic integrated circuits—complete circuits etched on very small silicon wafers—reduces space and power needs and increases reliability compared to ordinary solid state electronics. The computer memory itself is new—plated-wire arrays—resulting in the great increase in computer speed. These new engineering developments—plus program compatibility with other UNIVAC 9000 Series Computers—puts the 9300 far ahead of its class. The 9000 Series hardware is only part of the story. Software, the procedures for simplifying the programming effort and smoothing operations, is just as important. And the UNIVAC 9300 System brings the complete complement of advanced software support: Tape Assembler, Sort/Merge, Report Program Generator, FORTRAN IV, COBOL, Control Stream operations and Concurrency—processing one or two peripheral programs concurrently with a main processor run. Such concurrency can reduce total computer usage time in some cases to a fraction of what it would be without this capability.

Finally, a few words about compatibility. When your business expands and it becomes necessary to step up to a larger model in the 9000 Series, the programs written for the 9300 are immediately usable, as is.

9300

Get more than ever before

The 9300 System promises more than a vague set of management benefits. It offers big dollar benefits immediately to an unusually wide spectrum of computer users. Here are some of the ways that the 9300's dollar saving power can go to work for you.

As a high-performance card system

The 9300 System is probably the most powerful "card-walloper" on the market. With time-shared peripherals and microsecond processing, throughput is limited only by the speed of the input-output devices and these are very fast—

dual file input of up to 2,000 cards per minute, up to 1,200 lines per minute output, and constant speed punching of 200 cards per minute. The 9300 Card System is available at the cost of a few punched card accounting machines and at less than the cost of many punched card computers!

As a satellite system

The 9300 System offers to the large scale computer user of almost any make an extremely versatile substitute for on-line, input-output units. It can be used off-line for media conver-

sion (7 or 9 track NRZI tape to printer, card to tape, etc.) offering the substantial money saving advantages of concurrency in these operations. The dollar advantages are direct. Priced no higher than ordinary limited-function satellite systems on the market, the 9300 is both a satellite and a powerful computer on its own. And the larger computer is left free from the very expensive time demands of its own input-output units.

As a full-power magnetic tape system

The 9300 System opens up new territory as a magnetic tape processor. Going from a punched card processor to a magnetic tape system of any real power used to mean a very sharp increase in operating costs. But with the 9300, the step up to the applications benefits of magnetic tape processing can be made with very little increase—in some cases a reduction—in cost.

The 9300 offers benefits just as tangible to the organization that wants to replace its low performance magnetic tape system for higher throughput and power. The 9300 System certainly obsoletes any second generation tape system, and puts to shame any third generation tape processor in its price class.

Benefits of 9300 tape processing

The move up from punched cards—now achieved most economically with the 9300—opens a completely new dimension in management information, in control of day-to-day operations and resources. A few examples—

Order processing

Faster response to customer requirements; complete account and order position information available in the two or three minutes needed for a tape pass; much greater sensitivity to inventory changes and movement rates; complete billing and statement flexibility.

Sales analysis

Extremely rapid sales reporting using advanced analytical techniques; meaningful reporting, analysis and control of salesmen and territories; continuing and detailed analysis of trends.

Manufacturing control

Immediate factory order processing; high speed bill of material explosion; current updating of perpetual inventory. Far tighter control of work-in-process; closer monitoring of forecasts and variances; production dates scheduled more effectively and accurately.

Scientific processing

Fast arithmetic computing ability of the 9300 plus 600 nanosecond memory cycle time permit the system to economically perform your scientific, engineering, or statistical applications. Univac FORTRAN IV and Mathpac subprograms provide a wide range of software support.

The list is practically endless. The 9300 can serve the needs of almost any organization; it is a complete, multi-purpose data processing system.

Hardware facts

Plated-wire memory

This Univac "first" gives the 9300 Systems 600 nanosecond memory cycle time. As a result the central processor can perform over 20,000 additions per second. And, the plated-wire memory is many times faster than the core memory of more expensive systems.

The computer starts at 8,192 storage locations, field expandable to 32,768 bytes. Each byte contains 8 bits plus a parity bit, and can store two digits or one character of data or instructions.

Monolithic integrated circuitry

Univac's monolithic integrated circuits are built on very small silicon chips. A typical circuit may contain on a single chip, the equivalent of 21 transistors, 27 resistors, and 3 diodes. An extremely high reliability factor is engineered into these advanced assemblies. And, they need no interconnections as do hybrid integrated circuits. By drastically shortening electronic paths a more compact processor is produced. But more important, it is a faster, more reliable processor.

Processor features

The 9300 central processor provides, in addition to a powerful, standard instruction repertoire, sixteen registers. Eight are general purpose, available for indexing, arithmetic and central processor functions; the other eight are used for input-output control. Processing is overlapped with card input-output, printing and tape reading or writing.

Magnetic tape facts

The UNISERVO VI C magnetic tape drive handles half-inch, 7 or 9 track NRZI tapes, assuring complete data compatibility with the industry standard. At the 800 bpi density, the effective tape transfer rate is 34,160 all-alpha or 68,320 all-numeric (packed) characters per second, with the actual rates depending on the mix. Backward read is standard on all magnetic tape handlers.

The minimum configuration for a full-power tape system is three tape drives. Eight drives may be connected to one control unit. However, if simultaneous tape read-write is desired, a second control unit is necessary.

Printing versatility

The 63 character printer of the 9300 operates at 600 lines per minute, and a 16 character type bar permits all-numeric printing at 1,200 lines per minute. The standard 120 print positions can be optionally expanded to 132.

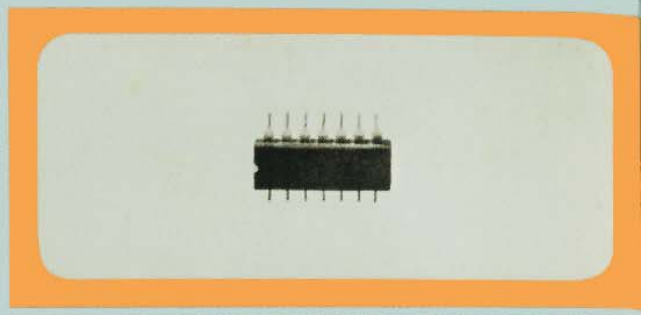
Highly versatile, interchangeable type bars—a standard feature—permit standard type bars to be replaced by specialized fonts in less than 60 seconds.

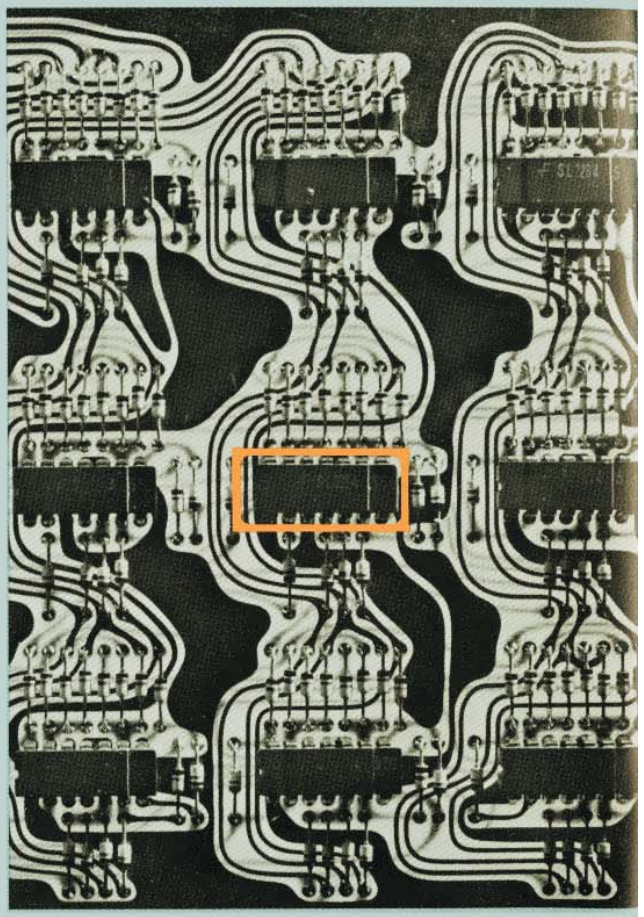
Card input-output

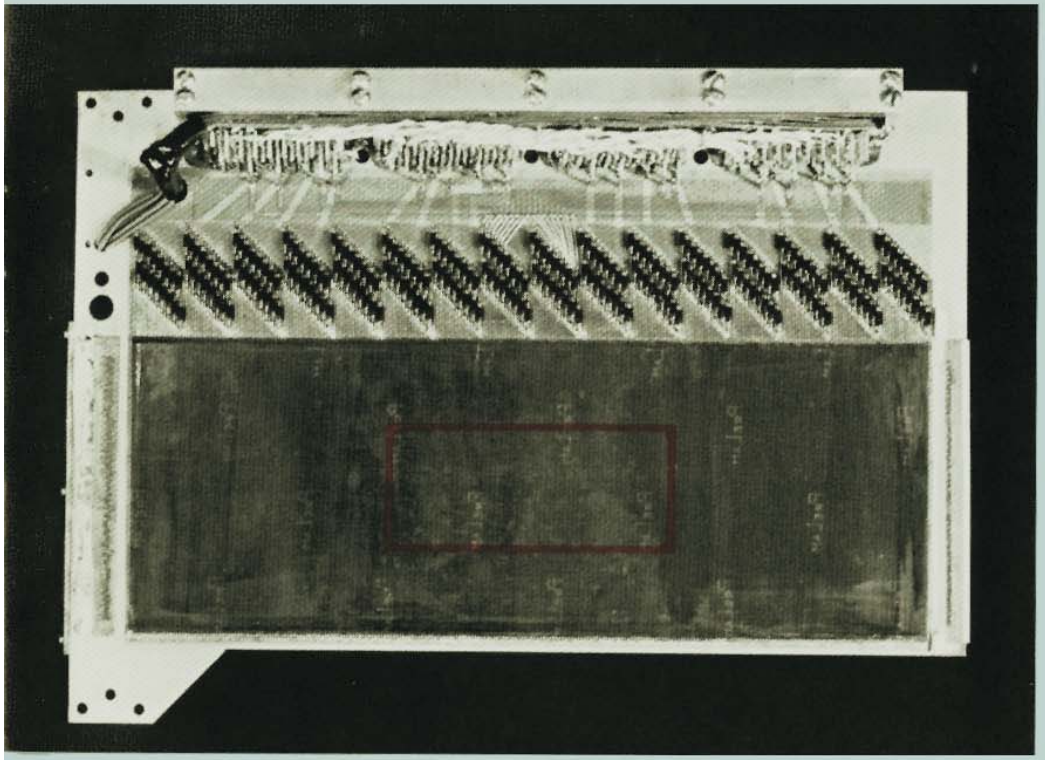
The card reader operates at 600 cards per minute. The card punch operates at 75 to 200 cards per minute; an optional row punch provides a constant 200 card per minute rate. As required, a read feature can be added to the punch for applications requiring reading and punching of the same card. The UNIVAC 1001 Card Controller can be linked to the 9300, providing multi-file input capabilities of up to 2,000 cards per minute, with extensive card processing flexibility. The 1001 also serves as off-line card pre-processor.

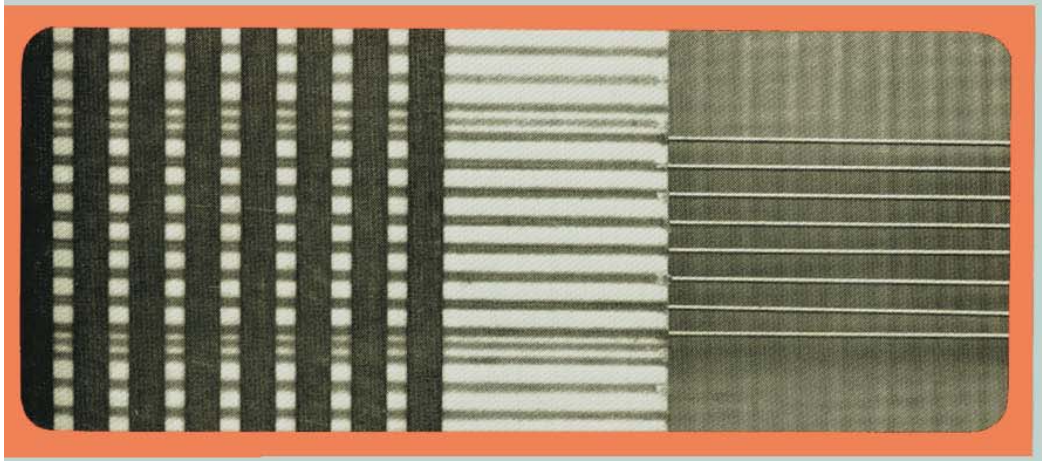
Multiplexer input-output channel

The high-speed multiplexer input-output channel, used for magnetic tape, the 1001 Card Controller, and constant speed card punch, will accept data at the rate of 85,000 bytes per second. This channel can handle up to eight subsystems and up to 64 devices.









Software facts

The UNIVAC 9300 System brings a full complement of operating software, to cover the range of programming, operating and computational needs. And special software has been developed to bring new operating efficiency to "small scale" tape processing. Here is a partial list of 9300 software.

- Report Program Generator—card and tape; particularly easy to learn and use.
- Assembler—card and tape, simple and convenient.
- Gangpunch Reproducer Program.
- Input-Output Control System—for card and tape.
- Tape Utilities.
- Sort/Merge Routines.
- COBOL for large systems.
- FORTRAN IV—available with four-tape, 16K systems.
- Control Stream operations for unscheduled batch processing and operating simplicity.
- Mathpac—Univac's subprograms for scientific calculations such as:
  1. Natural and common logarithms
  2. Square root calculations
  3. Arctangent
  4. Trigonometric sine and cosine
  5. Hyperbolic tangent
  6. Truncation
- Concurrency for maximum system utilization.
- A full package of programming, testing and de-bugging aids.

Some facts about concurrency

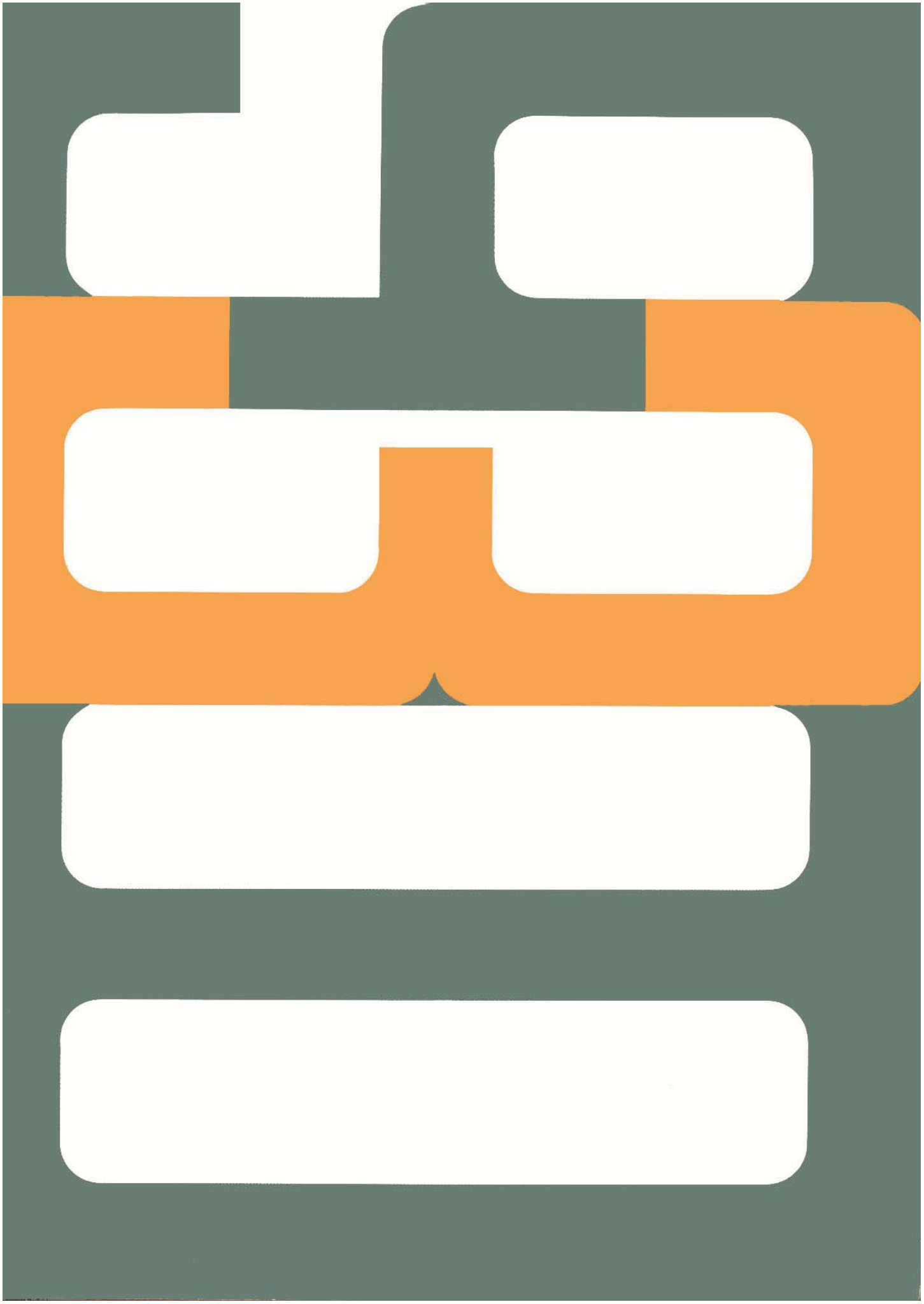
UNIVAC 9300 hardware and executive operating software combine to bring true concurrency to the low cost system. This means really sharp reductions in total computer operating time and fast turn-around; both mean lower operating costs. Concurrent processing means simply that a tape to tape central program may be run at the same time as one or two tape peripheral programs such as tape to printer, card to tape, etc. A minimum of one additional tape handler is required for two-way concurrency, and three additional tape handlers for three-way concurrency. Improved system performance may result by increasing the minimum required tape handlers in the configuration.

9200—low cost internally programmed card system

9300—high performance card and tape system with concurrency

...and the soon to be announced—9500 medium scale system
with real-time and multiprogramming capabilities

...and more to come...additional 9000 Series computers—
large scale general and special purpose, scientific,
real-time, and communications oriented systems



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