



The ENIAC Patent by Charles E. McTiernan

On 14 February 1996, the University of Pennsylvania celebrated the 50th anniversary of the dedication of the first electronic digital computer, named Electronic Numerical Integrator and Computer or, to be short, the ENIAC (see Fig. 5).

The U.S. Army placed the contract for its development with the University of Pennsylvania in 1943. The development work was carried out by J. Presper Eckert, Jr., John W. Mauchly, and some of their associates. After a very contentious prosecution inside and outside the Patent Office, U.S. Patent 3,120,606 was issued on 4 February 1964, listing Eckert and Mauchly as inventors. The patent was declared invalid in the 1973 decision handed down in the *Honeywell v. Sperry Rand et al.* case, technically known as 180 USPO 670.

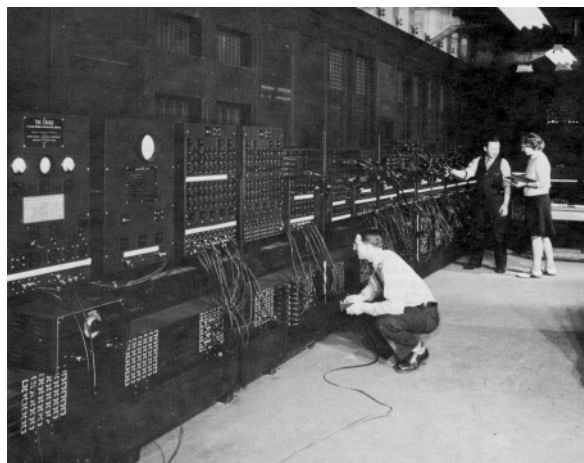


Fig. 5. Part of the ENIAC.

This article focuses on the patent aspects of the ENIAC development as distinguished from the technical aspects. For more details, I recommend *The Computer From Pascal to von Neumann* by Herman Goldstine. Goldstine, then an army lieutenant, was the liaison officer representing the Ballistic Research Laboratory, an army ordnance installation located at Aberdeen Proving Grounds (APG), Maryland.

I first became aware of the ENIAC around 1944, when I was an army captain stationed at APG. I had been assigned to the Ballistic Research Lab for about six months when I was transferred to the Instrumentation Section at APG. This section was responsible

for various velocity, pressure, and strain measurements made of armament through the use of electronic counters, oscillographs, oscilloscopes, piezo crystals, and strain gauges—all up-to-date equipment. It was after I became a patent attorney that I discovered that the strain gauge was invented by a professor in California and that his patent was held to be invalid.

Before and during 1943, the Ballistic Research Lab had the responsibility of developing firing tables for the artillery and anti-aircraft armament of the U.S. Army. The machine employed for this purpose was the differential analyzer, a mechanical monster developed by Vannevar Bush of the Massachusetts Institute of Technology. These tables were produced at a slow pace. In 1943, the Department of Ordnance of the U.S. Army placed a development contract with the University of Pennsylvania, which had among its employees Eckert and Mauchly. During the early development stage, an individual associated with the ENIAC development visited the Instrumentation Section where I was assigned. He disclosed that the ENIAC was going to replace Bush's monster and that the machine had 18,000 vacuum tubes. Of course, we thought he was exaggerating.

Under the Armed Services Procurement Regulations then in use, the university was obligated to grant the government the usual royalty-free license. There was no clause in the Armed Services Procurement Regulations pertaining to the preparation of the ENIAC patent application. Regardless, the drafting of the application was undertaken by the Patent Section of the Ordnance Department. A few years ago, I sought the view of William Hall on this point. Hall is a Washington, D.C., patent attorney and also was head of the Signal Corps Patent Section back around 1945. Hall simply stated that a royalty-free license was a practice at that time. When I was working in the U.S. Patent Office in 1946–1948, I noticed that applications prepared by the government patent attorneys were generally skimpy and probably were prepared only for disclosure purposes.

A first draft of the ENIAC application was started in September 1944 by a member of the Army Ordnance Patent Section. Then, in June 1945, Max Libman took his hand at it, resulting in a patent application being filed on 26 June 1947. This application consisted of many pages of specifications, claims, and sheets of drawings. It was a Herculean effort. Around 1949, after I joined IBM as a patent attorney, I was exposed to another Herculean effort by Joe Robbins. Robbins spent almost one year in writing the specifications and claims and even preparing drafts of the drawings for the IBM Selective Sequence Electronic Calculator. Note that IBM called it a calculator and not a computer. In fact, Robbins knew more about this electronic calculator than any of the multiple inventors.

It was around March 1945 that the question of title (i.e., ownership) of the ENIAC patent application arose between the firm of Eckert & Mauchly and the University of Pennsylvania. I believe that the university did not have any written invention agreement with Eckert & Mauchly. According to Goldstine, Eckert & Mauchly wrote the president of the university requesting title of the ENIAC application. The president replied by waiving the university's rights to the title but sought some minor rights in return. It should be noted that the university had the same problem with T. Kite Sharpless, who worked on the ENIAC and its successor (EDVAC). Sharpless had made an invention relating to a magnetic drum in the EDVAC development and obtained a patent on

his invention. Sharpless filed suit in the State Court of Pennsylvania against the university to quiet (i.e., ensure his rights to) the title and was successful. (Recently, I read in the newspaper that the university was having a problem with the inventor of Rectin-A, thus the problems persist.)

While the application was being prepared for the ENIAC, two events took place that would cast a shadow on the validity of the resulting ENIAC patent. The first occurred in December 1945, when the ENIAC was used to process calculations for the benefit of individuals at Los Alamos National Laboratory. By itself, this would probably have weathered the storm of an invalidity charge. The second event was the dedication of the ENIAC on 14 February 1946, which was open to every Tom, Dick, and Harry, including my son's prospective father-in-law. The ENIAC was being developed under a government confidential classification, and one could rationalize that this dedication would not seriously affect the validity of the ENIAC patent. This 1946 dedication did, however, violate the property rights of the inventors (Eckert and Mauchly). The dedication resulted from pressure by members of the academic world—including John von Neumann, a consultant for the ENIAC development. These academics were of the “publish or perish” mentality, even though it meant trampling on the rights of the two inventors. It is also noted that von Neumann, when it came to patenting one of his inventions, did not resort to such drastic action to invalidate his resulting patent. The dedication was a day of infamy in the annals of intellectual property. As things turned out, it was the “crutch” the judge used in holding the ENIAC patent invalid.

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In March 1946, Eckert and Mauchly, their work on the ENIAC now completed, resigned from the university and formed their own company. In July 1947, the ENIAC was installed at APG.

In late 1948, I resigned from the Patent Office and joined the IBM Patent Department.

In 1950, Remington Rand acquired the Eckert & Mauchly Company, including its patent portfolio. Attorneys from Remington Rand then took over the prosecution of the ENIAC application, including the initiation of a number of patent interferences, which was not extraordinary for pioneer invention.

Then around 1955, matters pertaining to the ENIAC came to the fore. It should be noted that around 1955, there was a difference of opinion as to the future marketing of computers. Some saw a bright forecast; others did not. IBM had obtained a forecast for the entire data processing industry from Arthur D. Little, a Boston marketing research firm, which indicated a certain dollar volume would be reached in 20 years. IBM reached the stated figure in about three years. Another measure of the data processing market could be found. The 3M Company had no interest in making and marketing magnetic tape for computers because of the low sales volume. I think 3M finally got around to marketing its own tape in the 1970s. Also around 1955, I became involved on behalf of IBM in a patent licensing negotiation. In the agreement,

I inserted a clause that when earned royalties totaled \$400,000, IBM's license became fully paid.

Unexpectedly, IBM reached that sum in only a few years, primarily because the internal market forecasts for drum and disk machines were far exceeded. This agreement pertained to a patent listing Sharpless and Stu Eichert (not to be confused with Eckert) as inventors. As previously mentioned, Sharpless had worked on the ENIAC and its successor EDVAC computers while at the University of Pennsylvania. Eichert was also employed by the university, but I do not think he worked on the ENIAC. There were two interesting things about this patent that came out later. One centered on the U.S. government alleging that the patented invention was made under the EDVAC contract. This matter went to litigation, and the court ruled that all elements but one were made under the EDVAC contract, resulting in payments being made to Technitrol—the firm founded by Eichert and the assignor of the patent. The other event was that the university asserted that it had rights to the title of this Sharpless and Eichert patent. Finally, in 1966, Technitrol filed suit against the university to quiet title to the Sharpless patent and prevailed on the title question (see case 164 PQ51).

It was in 1955 that things started to heat up between Sperry Rand and IBM. Sperry Rand resulted from a merger of the Sperry Company and Remington Rand. In December 1955, Sperry filed an antitrust suit, alleging violations in the field of tabulating machines—not data processing. Prior to the time Sperry filed the suit, Remington Rand attorneys had legitimate knowledge that the U.S. government and IBM were about to settle a 1952 antitrust suit against IBM. The consent decree was entered late in January 1956.

At the time of the filing of the Sperry Rand suit against IBM, the two parties were engaged in a number of interferences, including the ENIAC application.

IBM answered the Sperry Rand complaint and countered with an allegation of infringement by Sperry Rand of many IBM patents relating to the tabulating machine and Sperry Rand's data processing product line.

After Sperry Rand filed its complaint against IBM, another antitrust complaint was filed against IBM by an individual: John W. Whitson. Whitson's complaint was a simple copy of Sperry Rand's except for one page centering around his submission of an invention to IBM. IBM answered the complaint. Other than filing the complaint, Whitson did not take any other steps to further the complaint. Finally, the judge became impatient with the lack of progress, dismissed the complaint, and awarded IBM costs of about \$2,000. IBM's outside attorneys sent me the check, and I sent it to the accounting department, where the staffers were not sure how to enter the amount in the books.

Before Sperry Rand's complaint was filed against IBM, IBM had been gathering information relating to the filing in the Patent Office of a public use allegation against the ENIAC that was based on the 14 February 1946 dedication.

IBM did file in 1956, through its in-house attorney, Charles Boberg, a petition for the institution of a public use proceeding against the ENIAC application. Subsequently, the Patent Office rejected the petition without going into the public use issue. Then in 1959, IBM refiled a similar petition. Once again, the Patent Office denied the petition, because IBM did not make a prima facie case of public use.

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After IBM had answered the Sperry Rand complaint, IBM initiated a settlement with Sperry Rand. A settlement agreement was entered into on 21 August 1956 with the intent to settle all disputes between the parties in the tabulating machine and data processing areas with the understanding that IBM felt legally obligated to follow through on its public use petition. This settlement included:

- an exchange of licenses under each party's patents and applications then filed in the area of tabulating machines and data processing machines;
- an exchange of technical information that included exchanging copies of pending tabulating machine applications;
- a procedure to settle all patent interferences on an agreed informal basis; and
- a payment of \$10 million to be paid by IBM to Sperry Rand over an eight-year period.

Concerning the ENIAC, there was a royalty provision requiring IBM to pay Sperry Rand a royalty of 1 percent of the manufacturing costs of IBM apparatus covered by the claims of a resulting ENIAC patent, with the \$10 million payment being credited against any such royalties. It was noted, as I recall, that the obligation to pay royalties was only for the eight-year period during which the \$10 million in payments was to be made. In other words, if there were no ENIAC patent issues by August 1964, then IBM would not be obligated to pay an earned royalty. The chief negotiator in this settlement agreement was James W. Birkenstock, an IBM vice president.

As a result of the settlement, I sent Sperry Rand more than 200 IBM tabulating machine patent applications, and Sperry Rand delivered only 12.

Under the interference settlement procedure, the parties exchanged evidence and arrived at a determination as to which patent or application was entitled to the counts of the particular interference. There was nothing unusual about the parties informally settling the interferences. It was a common occurrence in the 1950s, and it expedited the procedure.

Then, around October 1960, I resigned from IBM and joined Sperry Rand. I was named director of patent and licensing for the Univac and Remington divisions of Sperry Rand. I became reacquainted with the ENIAC application, which was involved in an interference with a 1950 patent issued to Bell Telephone Laboratories, and it was proceeding at a snail's pace. In fact, the interference was set up in 1952, with the Board of Interferences awarding the *two* counts to Samuel B. Williams, the Bell Telephone Laboratories inventor.

As a result, in 1955, Sperry Rand filed suit in the Court of Customs and Patent Appeals, hoping to reverse the Patent Office decision (see 121PQ 39, decided 19 March 1959). I also discovered that Sperry Rand and Bell Telephone Laboratories had been negotiating for a number of years, hoping to settle the interference and exchange cross-licenses, but the matter dragged on and became dormant. My first thought on hearing of this interference and the failed negotiations was that it was delaying the issuance of the ENIAC patent and that if there was no resolution by August 1964, then IBM would be free of the obligation to pay Sperry Rand additional royalties subject, of course, to the \$10 million credit. The Patent Office would not continue prosecution of the ENIAC application because of this interference with the Bell

Telephone Laboratories patent. I thought this was ridiculous, because only a few claims out of many concerning ENIAC were involved. I recall twice meeting with Patent Commissioner David Ladd on this point but to no avail. Then I approached Western Electric, which had responsibility for licensing for AT&T and Bell Telephone Laboratories. I met with Ed Kane a few times. Finally, Kane offered \$2.5 million for a cross-license under each party's patents, subject to one condition. The condition was that the Sperry Gyroscope Company, a subsidiary of Sperry Rand, be obligated to pay a royalty on its transistor production. I went to Sperry Rand management, and Sperry Gyroscope objected. Accordingly, I so informed Kane. As time would tell, this was an unfortunate decision by Sperry Gyroscope. Within a few years, the subsidiary would be involved in a trade secret suit against some ex-employees, who established the National Semiconductor Corp. Also within a few years, Sperry Gyroscope stopped manufacturing transistors.

Here was [a patent] application that was not examined in almost 10 years.

It should also be noted that the dragging on of the interference with Bell Telephone Laboratories set up another "crutch" to be used against the resulting ENIAC patent—that is, late claiming.

On 27 September 1961, Sperry Rand and Western Electric entered into an agreement under which the parties exchanged cross-licenses under each other's patents, with Western Electric agreeing to pay Sperry Rand \$500,000.

This \$500,000 was well-appreciated by Dause Bibby, then president of the Univac Division, since Univac was losing money then.

As a result, the parties agreed to a procedure to speed up the interference dispute now assigned to the U.S. District Court in New York. On 6 September 1962, Judge Dawson, in effect, reversed the Patent Office and awarded priority to the ENIAC application. It is also worth noting that Judge Dawson did not find public use of the ENIAC invention.

Bell Telephone Laboratories then decided to appeal. In May 1963, the Court of Appeals dismissed the case as being moot (137PQ497-317F(2)49). The interesting thing about the decision is that I had some doubts about Bell filing an appeal because of our agreement. So I asked an associate, Henry Turin, to research the point, and he uncovered *Cover v. Schwartz*, which the Court of Appeals adopted—its "crutch."

The resolution of this interference with Bell removed the last stumbling block, and once again the ENIAC application was available for examination by the Patent Office.

After the favorable District Court decision, I met with Marshall Truex and John Dority, two learned and capable associates, to discuss the prosecution of the ENIAC.

As a result, a team was formed to aid in the prosecution of the ENIAC application. In addition to Truex and Dority, the team consisted of Bill Hall (an outside attorney), Chuck English, Sheldon Kapustin, Herb Somermayer, Jerry Light, and a few others whose names I do not recall. Each of the members of the team was well-versed in computer technology from a technical and patent viewpoint: Most of them had careers in the industry. Hall had the longest exposure to the ENIAC application, probably going back to the 1950s.

The team action produced an amendment of more than 200 pages, including many additional claims. Here was an application that was not examined in almost 10 years. A few days after the amendment was filed, I called the Patent Office to double-check that it had received the amendment. After a number of exchanged telephone calls, it came out that the Patent Office lost it or it had been misplaced. So another copy was filed. Finally, U.S. Patent 3,120,606 was issued on 4 February 1964 to Illinois Scientific Development Inc., a newly formed subsidiary of the Sperry Rand Corp. The suggestion to use this approach came from Hall. It was done for tax purposes and was the only asset of Illinois Scientific. Later, while I was attempting to license the ENIAC patent on behalf of Illinois Scientific, of which I was an officer, I found it difficult to attempt to license the ENIAC by itself, because the prospective licensees also were interested in the valuable patent rights of Sperry Rand.

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After the patent was issued, I informed Sperry Rand management of the fact and also pointed out the possible allegations that would be raised pertaining to its invalidity, such as public use and late claiming. I did not speculate on the amount of royalties anticipated. However, about 10 days later, an article appeared in the *New York Times* that quoted an unnamed individual at Sperry Rand that the firm expected to receive royalties of about \$10 million. I always suspected a particular financial officer of Sperry Rand as the source of the leak.

After the ENIAC patent was issued, I recommended to the then Univac president that Truex and Dority be awarded a special bonus, but it was not to be.

After the ENIAC patent was issued, I went down to the New York Stock Exchange and reviewed and made copies of the 8K and 10K reports filed over the past eight years by IBM and a number of possible infringers, such as GE, RCA, Honeywell, Control Data, Burroughs, and NCR. Then, I met with an executive of the Coopers and Lybrand accounting firm to seek his views relative to forecasting IBM's potential royalties based on the two reports as well as based on claim coverage of IBM products. I do not want to leave the impression that reviewing the figures in these reports resulted in simple black-and-white calculations—it did not.

I then wrote to IBM and informed it that the royalty obligation of 1 percent of the manufacturing cost of IBM products covered by the ENIAC patent was now effective and that an accounting of such was in order. Imagine a company reviewing the last eight years and trying to reconstruct the amount of money it owed.

There was a difference of opinion between IBM and Sperry Rand relative to the royalty base coverage of the ENIAC patent as applied to the IBM product line. IBM disagreed with our position that tape handlers were included in the royalty base.

Finally, the negotiations led to a meeting between high ranking IBM and Sperry Rand officers, including:

- Harry Vickers, chairman of Sperry Rand;
- Frank Forster, president of the Univac and Remington Rand divisions;
- Norman Frost, Sperry Rand's outside general counsel; and
- myself.

IBM was represented by:

- Vice President Birkenstock (to whom Tom Watson, Jr., gives credit for IBM staying in the data processing business) and
- Burke Marshall, a newly elected IBM vice president and general counsel.

At this meeting, Vickers agreed to an IBM payment of \$1.1 million. I later met with Forster and informed him of my objection, but he, while sympathetic, accepted Vickers's decision.

In December 1965, IBM and Sperry Rand entered into a cross-license agreement covering each other's patents and, I believe, patent applications filed within the next five years not only in the data processing area but also in the typewriter area. Note that IBM had earlier marketed its single-element typewriter, which was far outselling the typewriters of its competitors. History shows that Sperry Rand came out with a single-element typewriter about 10 years later, but it was not successful.

Before I went out seeking licenses from the six other dwarfs—as the media termed IBM's competitors, since IBM had about 85 percent of the market—Truex, Dority, and I agreed on asking an ENIAC royalty of 1 percent of the selling price. We were not trying to be greedy, especially since possibly all of the dwarfs, including Sperry Rand, were losing money in the data processing area. Also, it had been publicized that the two payments IBM made to Sperry Rand totaled \$11.1 million.

I then opened up negotiations with GE, RCA, and Burroughs. The meetings with GE were the most interesting and humorous, from my viewpoint. Initially, in 1966, GE did not have a patent portfolio of any significance in the data processing area to even raise an infringement threat against Sperry Rand. Also, GE selected as its negotiator George Elgroth, a learned and respected patent attorney who had experience in prosecuting computer patent applications. Unfortunately, Elgroth had picked up this experience while employed by Remington Rand in the early 1950s. Elgroth was involved in the prosecution of a number of the Eckert and Mauchly applications, including the ENIAC. Elgroth probably knew the earlier Remington data processing patents better than I did. Thus, Elgroth was at a great disadvantage because of his past involvement in the Eckert and Mauchly applications and patents. He could not argue that they were invalid. However, he was adept at stonewalling. A number of times, he would lament about his great problem of getting the GE Board of Directors to agree to sign any agreement, because each division of GE was independent. During one of our meetings, he told me that his son found a Univac computer in a junkyard, and his son was looking for a maintenance manual. I sent Elgroth a manual. As time would tell, his stonewalling was successful.

During the time I was attempting to license the ENIAC patent, I received a call from one of the companies that I had approached. The caller told me that Sy Yuter, a New York patent attorney, had contacted that firm and offered it an option for a license under the ENIAC patent. It appears that Yuter represented the Technitrol Company, which was organized by Sharpless and Eichert, and that

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Sharpless was probably raising the claim that he was a joint inventor of the ENIAC. Yuter was offering the option based on the assumption that Sharpless and some other University of Pennsylvania engineers who worked on the ENIAC were joint inventors. I pointed out to my caller that Sharpless had testified in the Sperry Rand/Bell litigation and had never raised the inventorship question back then.

However, one must give the devil his due. In the subsequent Honeywell/Sperry Rand litigation (180PQ670), Honeywell raised the question of additional inventors. The judge indicated that he was inclined that Sharpless and others made contributions to the ENIAC development but ruled that Honeywell did not prove this inclination. Also in the Honeywell decision, it is reported that on 27 September 1944, Eckert wrote a letter to all engineers on the ENIAC project that now was the time to assert any claim of inventorship. None was made.

Of the seven dwarfs, RCA probably had the second best patent portfolio because of its early magnetic core work.

Sharpless and his fellow employees at the Moore School of the University of Pennsylvania were not the only people who tried to be recognized as joint inventors of the ENIAC. Another was John Atanasoff. Atanasoff was a mathematics and physics professor at Iowa State College. In 1939, Atanasoff was working on an electric digital computer for solving simultaneous equations. In December 1944, Atanasoff met Mauchly at a scientific meeting in Philadelphia, and he disclosed to Mauchly the machine he was working on. It was at this meeting that Atanasoff invited Mauchly to come to Iowa and see his work, which Mauchly did. It was during the Honeywell/Sperry Rand trial that Atanasoff's assignor decided to take legal steps to intervene in the Honeywell litigation for the purpose of naming Atanasoff as a joint inventor.

The judge, in a decision dated 8 August 1971 (54 FRD593), denied Iowa State's petition, because it was not timely. It is noted that this step by Iowa State to intervene presented a very interesting problem to Honeywell, because Atanasoff had already testified in the litigation on behalf of Honeywell with the intent to undermine the validity of the ENIAC patent on which he was now claiming to be listed as a joint inventor. On 3 May 1972, the Eighth Circuit Court of Appeals upheld the lower court's decision (459(2)447).

Iowa State and Atanasoff did not give up. There was another litigation going on between Sperry Rand and Control Data involving another Eckert and Mauchly patent (2,629,827). The Fourth Circuit of Appeals decided (444 F(2) 406) to allow Atanasoff to intervene in that litigation.

In my meeting with RCA licensing executives, they questioned the availability of licensing under Sperry Rand's data processing patents. In 1950 and 1960, Sperry Rand had probably the best data processing patent portfolio in the industry, which was attributed to three early 1950 acquisitions by Remington Rand. Of the seven dwarfs, RCA probably had the second best patent portfolio because of its early magnetic core work.

In mentioning the patent portfolios of the seven dwarfs in the early 1960s, Control Data—a young company that was involved in a trade secret suit with Sperry Rand because of defection by Sperry Rand employees to form Control Data—had very few patents. In fact, when Control Data acquired Jacob Rabinow's small character recognition company, Rabinow pointed out that he had more patents than Control Data.

As to NCR and Burroughs, if they had any worthwhile data processing patents, it was limited to cash registers or banking machines.

However, it is interesting to point out that just about this time (1965), RCA, Honeywell, and GE each entered into technical information and patent-licensing agreements with Japanese companies. RCA licensed Hitachi and received an upfront payment of \$500,000 plus a royalty of 5 percent. GE and Honeywell entered into a similar agreement with other Japanese companies.

Getting back to dealing with RCA, sometime in February 1966, RCA offered me \$1 million for a paid-up license under the ENIAC patent and other patents of Sperry Rand. I recall advising Sperry Rand management that my recommendation was not to accept this offer.

It was about this time that Forster visited me and told me that Bob McDonald was to be the next Univac president and he (Forster) was to become president of Sperry Rand. McDonald was a good man, and I think I had excellent relations with him. However, in my six years with Univac, I saw five or six different presidents of Univac. I inquired of the status of my budget from Forster, and he told me he was cutting it in half. It was then that I entertained thoughts of resigning from Sperry Rand. Later, I had a discussion with either Forster or McDonald, and I was informed that Univac, including my operation, was moving to Blue Bell, Pennsylvania. This added to my urge to leave the firm. I met separately with Forster and McDonald and informed them I was resigning. McDonald asked me to recommend a successor, and I recommended Dority.

Sometime in April 1966, I joined IBM for an assignment in Tokyo as director of contract relations for IBM World Trade Asia Corporation. This ended my involvement with the ENIAC patent.

From 1950 until 1966, IBM paid around \$26 million for freedom under patents of others either to purchase a patent or to enter into a license agreement. As to the seven dwarfs, Sperry Rand paid about \$1 million over the same period, while the other dwarfs paid less than Sperry Rand did. I am basing my estimates for the other six dwarfs on knowledge of patent owners, who were asserting their patents against the industry.

When I moved from Sperry Rand to IBM and then to Japan, I generally lost track of the ENIAC. However, from the public record, I note that on 26 May 1967, Illinois Scientific filed an ENIAC infringement suit against Honeywell in the U.S. District Court for the District of Columbia. On the same day, Honeywell filed suit against Sperry Rand and Illinois Scientific in the District Court for Minnesota, charging violation of the Sherman Act and seeking invalidity of the ENIAC patent. Then on 26 May 1968, the District of Columbia suit was transferred and consolidated with the Minnesota action.

(Continued on p. 80)

Happenings

the GE Advanced Electronics Center at Cornell University, he led a team of scientists and engineers to develop a total electronic banking system. He is the author of *King of the Seven Dwarfs* (CS Press, 1996), which describes GE's 14 years in the computer industry.



Fig. 3. Robert Kahn.



Fig. 4. Barney Oldfield.



Award for J.A.N. Lee

J.A.N. Lee was awarded an Outstanding Contribution Certificate from the IEEE Computer Society for his "outstanding contributions as editor-in-chief of the *IEEE Annals of the History of Computing*," an evaluation with which we heartily concur.



1998 IEEE Medal of Honor

The 1998 IEEE Medal of Honor has been awarded to Donald O. Pederson, a researcher and educator whose pioneering work on computer-aided circuit design has profoundly affected the success of the semiconductor and electronics industries. Pederson, professor emeritus of electrical engineering, University of California, Berkeley, has been named recipient of the highest honor for creation of the Spice program, a means of simulating circuit design that has been universally used for more than 25 years. Today, Spice design is the benchmark for new integrated-circuit simulation technology. The IEEE Medal of Honor is sponsored by the IEEE Foundation.



Web Sites

Mind Machine Museum: The Mind Machine Museum has a new web address:

<http://userwww.sfsu.edu/~hl/mmm.html>.

Its illustrated listing now includes more than 120 historic computers, video games, and calculators. Some machines have yet to be photographed, so the site is regularly updated.

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Honeywell raised a number of issues, such as the 1946 dedication of the ENIAC constituting public use, delay in prosecutions, question of inventorship, and that the 1956 and 1964 Sperry Rand/IBM agreements were discriminatory.

Trial started without a jury on 1 June 1971 and closed on 13 March 1972. After suit was filed, Iowa State attempted to intervene with the assertion that Atanasoff was a joint inventor. The court in 54 FRD 593 denied the petition as not timely, and this was upheld by the Court of Appeals in 459 F(2) 447, decided on 3 May 1972. It is interesting that in a case Sperry Rand filed against Control Data and involving another Eckert and Mauchly patent (2,629,827), Iowa took steps to intervene that Atanasoff was also joint inventor of patent 2,629,827. The District Court allowed Iowa to intervene, but ruled it lacked authority to correct the patent because Eckert and Mauchly withheld consent. Then on 22 June 1971, the Court of Appeals in 444 F(2) 406 affirmed and remanded permitting Iowa State to seek a certificate of correction naming Atanasoff as a joint inventor. Iowa was certainly trying to take a big step concerning an invention based on a breadboard model and for which Atanasoff's patent attorney did not file a patent application because of insufficient data.

Finally, on 19 October 1973, the District Court in 180 PQ 670 found the ENIAC patent was invalid and unenforceable. The judge threw the kitchen sink at Sperry Rand. He ruled, among other things, that the subject matter of the ENIAC was derived from Atanasoff; that all other claimants of joint inventor were denied; that there was no undue delay in prosecution of the ENIAC application; and that the 1956 IBM/Sperry Rand cross-license and technical information agreement was an unreasonable restraint of trade by the two firms, but there was no violation of Section 2 of the Sherman Act. It is noted that, consequently, this litigation was settled, with Sperry Rand paying Honeywell \$3 million. The ENIAC was buried, and may it rest in peace.

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