Conference maketh a ready man
Or, twenty-five years in the better joints

by HERBERT R. J. GROSCH
Consulting Editor, COMPUTERWORLD
and Vice President, Association for Computing Machinery
Sunnyvale, California

ABSTRACT

The author rehearses, with much pleasure, the origins, physical circumstances, personalities, exhibits and papers of the Joint and National Computer Conferences, from December 1951 to the present meeting.

The Joints are no more, at least in name—but long live the NCCs! I suffered the agonies of grim Philadelphia at the very first Joint, not yet named “Eastern.” I enjoyed the dubious sunshine of Los Angeles at the first Western, not yet named “Joint.” I was on the JCC Board twenty years later, when, hoping to retrieve the big exhibitors of the Sixties, our Industry Advisory Panel told us

"The time is out of Joint;"
and we replied, each one of us,

"O cursed spite,
That ever I was born to set it right!"

And we coined the name, National Computer Conference, to mark the dubious sunshine of Los Angeles at the first Western, not yet named “Joint.” I was on the JCC Board twenty years later, when, hoping to retrieve the big exhibitors of the Sixties, our Industry Advisory Panel told us

"The time is out of Joint;"
and we replied, each one of us,

"O cursed spite,
That ever I was born to set it right!"

There are 45 conferences, counting this one, and they stretch over a full quarter century. I attended 35, and would have gone to more except for a long sojourn in Western Europe in the early Sixties. Recent comers to our trade can hardly imagine the novelty of a computer conference in 1951. The first production computer, a UNIVAC I, had just been delivered to the Census. The most powerful IBM machine in production was the ineffable Card-Programmed Calculator. The Association for Computing Machinery was only four years old, and was years away from its first formal publication series. The IEEE did not yet exist, and the two societies which

From the collection of the Computer History Museum (www.computerhistory.org)
later merged to form it did not themselves care much for the minuscule computer activities of the time. The Institute of Radio Engineers had had an Electronic Computer Committee since early 1948, for which I had helped produce a bibliography (a few dozen entries) in 1949, under the direction of Bob Serrell. The American Institute of Electrical Engineers had a Committee on Computing Devices—and analog “devices” were also hot stuff in the Forties and early Fifties.

These two committees in turn appointed, in early 1951, a joint committee to arrange a conference. That first JCC met in Philadelphia, the world center of electronic computer activity at the time. The Moore School, the Eckert-Mauchly division of Remington Rand, the proximity to Aberdeen Proving Ground (the largest computer center of that day, with a huge differential analyzer, punched card machines, IBM and Bell Labs relay calculators, and of course ENIAC) and the relative closeness of Washington, all contributed to this judgment. Washington would have been suitable also, and was indeed the site of the third eastern meeting two years later. It was the source of most funding of one-off machines, the purchaser of most production computers, the nexus of enthusiasms for the Defense Calculator, IBM’s yet-unannounced scientific computer (called Type 701 from 1952 on). Another main factor in the choice of Philadelphia was that attendees could actually see, feel, smell the equipment—and that excitement led to the exhibit idea, and to the National Computer Conference as we see it today.

In February 1952, delighted with the unexpectedly large attendance (almost a thousand) the committee published with AIEE help the first Joint proceedings. Figure 1 gives the table of contents; note the early appearance of British participants (both Cambridge and Manchester); note Jean Felker’s paper on using transistors, then less than three years old; note that monuments such as Howard Aiken’s MARK III, Sam Alexander’s SEAC, and Jay Forrester’s WHIRLWIND I were described. And note the first big drum-dominated 1100-series machine, already at work on cryptopgraphic problems: “… the user is not free to talk about his classified applications.”

A few last words about origins: there had been a jointly-sponsored meeting on electron tubes for computers in 1950 (Atlantic City, thus setting a horrid precedent), and except perhaps for an early lack of perspective that somewhat smaller gathering could have been labeled the first Joint Conference. And ACM, although interested more in hardware in 1951 than in later years, only “cooperated” in organizing the Philadelphia sessions. The title page of the very first meeting says “Joint AIEE-IRE”; of the second, “Joint AIEE-IRE-ACM”!

I remember rather faintly that hotel arrangements were pretty grim, and that social events were limited to privately-arranged tours to the UNIVAC, to Burroughs, and to the Moore School. I remember vividly buttonholing everybody I knew to tell them how great IBM’s new machine was going to be—I was fresh from several months in far Poughkeepsie! I remember John Bennett saying there would be an Australian meeting the next year (and there was!). I remember there were a few senior women professionals present, but none on the committees or program. And I remember being impressed that Charlie Strang, a vice president of Douglas Aircraft, would come all the way from Santa Monica to gray Market Street to tell us a user’s story—the only such paper. The weather? I don’t remember. Did I bring my wife? No. Did I enjoy it? Well, yes; great stuff about several impor...
tant new ventures, and hot news from England. But I didn't get to say anything myself!

In those days we read MTAC, "Mathematical Tables and other Aids to Computation," a very curious National Research Council publication. It still exists, in a much more esoteric format. Along with errata in printed tables, book reviews of new numerical analysis texts, and the like, the editors reviewed articles on computers and computing, described new machines and acceptance tests, and told about conferences and seminars. In 1952 they gave the program of the Philadelphia meeting, and in 1953 published a six-page review of the Proceedings, by Ed Cannon of the Bureau of Standards. This was the first appearance in the nonengineering literature of the many, many references over the decades, to our formidable conferences.

The second year the show really got on the road, in a manner of speaking. First of all, there were exhibits—and from that, in late 1952, we never receded. Then it traveled: met in New York. And clouds not much larger than a man's hand were visible: a 25 percent gain in attendees, and a Western Liaison subcommittee. Aided by the proximity to Galactic Headquarters at Madison and 57th, the various committees tapped IBM for personnel and other support: I had expected to be involved, although then based in Washington, but was extruded from the Body Economic for general recalcitrance only a few weeks before. This probably accounts for my rather specialized impression of JCC2: Jay Forrester offered me a job at Whirlwind!

Margaret Fox of NBS did most of the program, and there was a paper on SEAC offline input-output gear by Ruth Haueier: first major feminine influence. The whole program, in fact, revolved around peripherals, from magnetic wire (!) and tape equipment to Kimberly tags. Paper tape, punched cards, photographic techniques (including a read-only disk), and the ubiquitous line printer all were discussed. And of great interest to me, of course, the first major papers on the IBM 701.

Don Davies, today the top man at the National Physical Laboratory, was a new but welcome visitor. General Electric made an appearance, threatening to build a nonimpact printer. And artificial intelligence, the advisability of standards, and economic modeling were all mentioned—just like 1976!

The scene now shifts to that hotbed of technical computing, Los Angeles. The tin airplane was flourishing, missiles were at least conceivable, and spies had been sent to the East and had reported, notably Harry Huskey and Dick Canning. The joint committee decided to try a western conference. And because the enormous later development of componentry, of peripherals and of systems had not yet flowered, most of the papers concerned applications (Figure 2). Canning had just come down from Mugu, McCann and Morton were pushing hardware at Cal Tech and Berkeley, the Northrop offshoots had incorporated (CRC, later to be a part of National Cash). There were exhibits: I particularly relish the memory of a Telecomputing point plotter that counted the lines on graph paper.
I also relish, perhaps comfortably in view of the dominance of digital ideas today, the comment I made to Arthur Vance, a prominent RCA analog man, that effort should preferably be spent on numerical analysis, and less on stringing "900 integrators on the end of one piece of wire. (Laughter and applause.)" *Plus ça change...*

Now that there had been a Western, and a reasonably successful one, the senior conference had to be relabeled. So from that point on, we had Eastern Conference—nine of them, through 1961. And, as the third eastern conference was called "Eastern," so the third one on the Coast would be called "Joint," in 1955.

That first EJCC was held in Washington, still in early winter. I gave the after-luncheon speech, which does not read too well almost 23 years later. But the papers do, notably the first conference report on magnetic core memory, first mentions of life insurance "Electronic Data-Processing" and of numerical weather prediction. One of the very earliest interpreters, the Los Alamos SHACO (Short Hand Coding), was described, and discussion of open shop versus closed shop appeared. I remember the former: Allan Benson had worked up a three-address floating point package for the very first 701. And as for the latter, why, I had a great closed shop in Cincinnati and couldn't see why anyone would want the opposite: "it requires more tactful people," said the Los Alemite. What I wanted was core instead of electrostatic memory; definitely not tact!

This Washington meeting was keyed by Howard Engstrom, and his presence was an early link to the National Security Agency. The next Western, two months later, saw some of the bedroom conferences that led to SHARE later that year (1954), and NSA, super-secret though it was, became a charter member.

The Washington meeting was perhaps the last in which everybody discussed reliability. There would be dour jokes in the trade for many conferences to come about specific hardware problems: air conditioning, head crashes, and so on, up into modern times. But increasingly there would be concern for software problems; the hardware was working.

There were exhibits, but in the small Statler environment; the day of the giant hall and the gorgeous booth bird had not dawned.

Well, there was one more Western Computer Conference to go, at the Ambassador in Los Angeles—I remember I ran my first major recruiting suite. The exhibit list was getting longer, and space was tight.

There was heavy emphasis on control applications: machine tools, chemical processes, and feedback of material on the program, and in the Spring of 1955 I was sharing his experiences. One 650 customer described an "automatic coding" technique; to-day we would call it an optimizing interpreter. And in the information retrieval field, one of the earliest appearances of the team of Perry, Berry and Kent, then at Battelle, was also a near-first for that subject at a Joint.

By this time the three sponsoring groups saw they had a Good Thing going, and formalized the joint committee's structure, prescribed the steering committees for the two annual conferences, and set up financial procedures (the surplus was divided equally, and each conference started from scratch, with volunteer workers and a small loan "from each of the sponsors").

Clearly, a machine had started to grind.

The seventh one, the first to be called Western Joint, I missed. ACM records say it was at the Statler in Los Angeles, and AFIPS records show 1500 registrants, double the 1953 startup number. There were trips and exhibits, and a big publicity thrust. Don Pendery of IBM was on a panel about common languages. On the other hand, there was a lot of analog material on the program, and in the Spring of 1955 I was helping persuade General Electric Syracuse, in the person of the famous W. R. G. Baker, to start its own computer adventure. So, although I had lots of travel money, and a continuing need to recruit—one of the major activities at all early Joints—I passed it up.

The papers list includes Charlie De Carlo and Willis Ware, Newell on chess machines, and Bob Johnson's doctoral thesis. Must have been a good meeting!

By this time SHARE was official, *Fortune* cared about computers, and IBM was delivering 704s. The president of Burroughs, no less, came to Boston for the 1955 EJCC and talked about computers as management tools: not too sensibly, as I remember it, but it flattened us all nevertheless. Indeed, the conference was quite strongly DP oriented; even Tony Oettinger, then a humble instructor at Harvard, did a piece, as

Ridenour was playing his games at International Telemeter. It was a small but golden time.

That December, the Easterners turned back to Philadelphia, and I was program chairman. This was still the era of single sessions, mind you, and of one-man program committees. I chose small digital computers for a subject; tongue-in-cheek, no doubt, Charlie Adams did a keynote that mentioned a fictional giant machine: "Officially the giant brain was the SOCIAC, but . . . around the office it was known as Herbie." Alan Perlis, of all people, did the survey paper. How have the leaves fallen: the IBM 650, the Marchant Miniac, the Alwac! I read the other day there were "several hundred" minicomputer and microprocessor types in current production. In 1954 there were nine. Most were decimal, none were transistorized; one had an early cassette ("magnetic tape capsule").

Software? Not much, although Stan Gill had come over and was sharing his experiences. One 650 customer described an "automatic coding" technique; to-day we would call it an optimizing interpreter. And in the information retrieval field, one of the earliest appearances of the team of Perry, Berry and Kent, then at Battelle, was also a near-first for that subject at a Joint.

From the collection of the Computer History Museum (www.computerhistory.org)
did Bob Gregory. There were review papers on information retrieval and on data communications networks. Networks, yet! And I did my first-ever paper on standards; fortunately, it had been forgotten before I was interviewed for the NBS job ten years later! It was followed by a sound—soundly pessimistic—review of magnetic tape standardization problems by Ampex and ElectroData and telephone and government people.

Finally, Jay Forrester in a conference summary referred to computer toys and computer kits and electronic surplus gear, a preview of the myriad hobby enterprises of LSI 1976.

Space of course doesn’t permit a review of every Joint and National; moreover, after the first ten or twelve, media developments make information and impressions more easily available. Many libraries have the later conference proceedings; many libraries and individuals have access to the JCC issues of Data- nation, which began covering the Joints in 1957. What I therefore will do from 1956 on is to skip along, recalling high points, personal or professional, and relating them to the rapidly developing world outside the three societies and their enterprises.

The 1956 WJCC was held at the Fairmont in San Francisco, beginning a love affair with that town which lasted until the exhibits finally outgrew available space in 1968. Shortly thereafter I moved to Phoenix to help GE enter the field, and was put on the Western Conference Committee. The 1956 EJCC re-worked the organizational structure behind the conferences (they were growing at incredible speed), and created a National Joint Computer Committee. It was the existence of these initials, NJCC, for so many years thereafter that militated against adoption of NJCC in 1972, as the initials of the new once-a-year conference and exhibit. The letters “NCC” were chosen instead.

The 1956 conferences, taken together, were dedicated to great projects: BIZMAC, the DATAMATIC 1000, the Univac LARC, and the IBM STRETCH. The first IBM 705 was delivered, tubes and all, to Jack Jones in Atlanta; first time I’d heard of him. The 709, tubes and all, wobbled onto the scene. But in the forefront, in single copies but vastly significant, were the first powerful transistor machines: the MIT TX-0, with 65K words of core, and the Transac S-1000. Oh, and IBM brought out the first disk machine: RAMAC. I remember the latter not so much for its novel appearance but for the fact that the IBM engineer who described the machine actually quoted the rental!

For the 1957 Washington conference I still have my registration receipt: $4.00. Those were simpler times: single sessions, straightforward entries like the Bendix G-15, open scandals like SAGE. For the first time, a fourth organization, the National Simulation Council, shoved its tiny nose into the tent.

In 1958, social implications: a great panel which I remember vividly, with a famous Yale professor, a great union man, and IBM’s Cuthbert Hurd (severally identified in the Proceedings as “Nonmember AIEE!”) taking an early look at automation. For the first time, multiple sessions. And for the first time on any continent, the Bull Gamma 60, with Philippe Dreyfus; I helped him a little. At the session that winter, in Philadelphia again, Heinz Gumin, now the top Siemens man in computers, came over for the first time, and described the 2002. I was more interested at the time, not realizing that I would soon be moving to Europe, in the paper on microprogramming by Maurice Wilkes, by now almost a fixture at the eastern meetings. Also, having served my time in Phoenix, I noted but did not attend the paper on the magnetic-character check handler, ex-ERMA.

Cal Mooers was in great form in San Francisco: information retrieval. And I did the ladies program. Also Charlie Asmus, for many years to follow the key figure in staging the ever-growing exhibits, began major participation at the meeting.

The next vivid memory I have is of EJCC 1960. It was held at the Manhattan Center and the New Yorker Hotel, just before Christmas. And the night before, December 12, it snowed. And snowed. And snowed! Most of the exhibitor trucks, and most of the attendees, missed the first day entirely. I lived in New York that year, and arrived promptly, by subway. It was this near-catastrophe, modulated of course by the several-year lead times now necessitated by the size of the Joints, that led to the changed pattern of the Sixties. From 1951 on, the eastern conferences had been held in December, and in the East the weather was frequently awful. The western conferences had drifted from February, too soon after the EJCCs, to May, when the weather was great everywhere. So in 1962 the old terms “Eastern” and “Western” were abandoned, the conferences were switched, and from that time to the end of the two-a-year Joints, the eastern meeting was held in May or so, and called “Spring,” and the western one was held in November, always pleasant in the West, and called “Fall.” In order to effect a transition without two meetings in a row on one side of the country or the other, the 1963 SJCC was held in Detroit; I came back from Europe to attend, partly because of the novelty, partly because, living overseas, I had missed three or four Joints in a row, and the friends I saw at them. That was the midpoint conference, in many ways: Number 23. NCC 76 is Number 45.

The next dislocation in the series was a simpler one: there was no Spring Joint in 1965. New York was the site that year of IFIP 65, the second of the triennial international meetings. The zeroth, pre-Federation, had been held at UNESCO in Paris in 1959, and the first, in Munich in 1962. So, preparing to sponsor the 1965 sessions and show, AFIPS gave up one Joint.
MESSAGE FROM NJCC CHAIRMAN

This is an historic occasion. The close of this 1961 Western Joint Computer Conference will signal the change-over in administration of Joint Computer Conferences from the National Joint Computer Committee to the American Federation of Information Processing Societies (AFIPS), with broader scope and greater flexibility. As you know, AFIPS is a society of societies organized to represent through a single body the professional societies of the American computer and data processing world. The enthusiastic response to the formation of AFIPS is highly gratifying and lends encouragement, confidence and a sense of mission to those whom you have charged with conducting its activities.

There are times when the path to the future is best appreciated through a re-examination of the past. I would like to quote from a letter dated December 15, 1959, written by the late Chairman of NJCC, Professor Harry Goode, who contributed so much both to NJCC and to the birth of AFIPS:

"I believe the major objective in the formation of the society is to provide for information flow in all other instances than those provided for by the individual societies to their members."

"There are four types of such flow:

(1) Information flow between members of information processing societies nationally.
(2) Information flow between our national information processing society and foreign information processing societies.
(3) Information flow between societies in the information processing profession and other professions.
(4) Information flow from the information processing societies to the general and educational public.

"If we can recognize a firm set of objectives such as these (which of course need to be rewritten into a proper set of words), then what the society is to do is relatively clear-cut.

"The functions follow immediately from the objectives:

(1) Act as the American representative body on matters related to computing application and design, in a broad area of computational and information processing sciences.
(2) Advance the field by stimulating research into new aspects of computer sciences emphasizing the cross-pollination of ideas among member societies.
(3) Prepare, publish, and disseminate information of a tutorial nature to laymen, high school teachers and students, government officers and officials, etc.
(4) Maintain relations among American and foreign technical societies through conferences and symposia, cooperation with other societies in organizing sessions at their conferences; provide reference material to other societies on the computational sciences.
(5) Maintain membership in the International Federation of Information Processing Societies (IFIPS).
(6) Aid in certain actions of member societies involving participation and cooperation by more than one society.
(7) Sponsor the JCC's."

The Constitution of AFIPS reflects these views in their entirety. With your frequently demonstrated cooperation and support, the Board of Governors of AFIPS will continue to conduct our successful Joint Computer Conferences and to represent the United States in our International Federation, IFIPS. As new societies join the Federation, it will gradually provide the hoped-for broad representation of the American information processing profession. We will seek to establish AFIPS as the information center on data processing including not only bibliographies of written material, but also a calendar of events of computer activities in the United States and throughout the world, a roster of individuals active in information processing, and a current file of developments in progress or recently summated. We plan to establish a speakers' bureau to carry information on the information processing field to educational institutions and professional societies. We plan to establish a public information committee which, through the media of personal contacts, press releases and tutorial articles, will make available to laymen, to government agencies, to affiliated and member societies and to the profession as a whole, the present status and the probable future of information processing in the United States.

I trust that with your continued cooperation and support our efforts will meet with a long string of successes.

Respectfully submitted,
Morris Rubinoff, Chairman
National Joint Computer Committee

Figure 3

Yes, AFIPS; in order to simplify U.S. representation in the International Federation of Information Processing after its formation in 1960, the National Joint Computer Committee had transformed itself into AFIPS (see Figure 3). I had been involved as an ACM representative to the NJCC in 1959 and 1960, but was getting ready to move to Europe at the crucial moment. I remember Walt Bauer was the chairman of the last pre-AFIPS Joint, in May 1961, and that the death of Harry Goode, who had planned the changeover, cast a pall over much of the action.

I attended IFIP in New York as a recent immigrant; Generous Electric had reached out to Lausanne and hauled me back to lovely Santa Barbara just a month or so before. I had missed the first Las Vegas meeting while overseas, and hence doubly relished the 1965 FJCC. It was huge; Asmus was in his glory. The town was fun, to one who had been away for some years.

The papers were fresh; I especially remember a panel on the overseas market (Norm Ream, Jim Miles and others)—I commented from the floor that it would be safe to let the Russians have big CDC machines, but only if they agreed to take the software too! And there was a great look-ahead panel that opened my eyes to the coming LSI revolution: Rex Rice had just gone to Fairchild.

This was the first Joint to publish its proceedings in two volumes; the San Francisco 1968 holds the record to date, with 3.5 inches of paper and bindings. The first nineteen Joints had paper-covered proceedings; bound library-style, they span ten inches. The volumes from 20 on, which were bound by AFIPS, span 53 inches; already, we have the proverbial five-foot shelf of books!

At the end of 1962, the IRE and the AIEE, founding fathers of the Joint concept, had merged into the
IEEE. The Simulation Council had become a smaller member, so AFIPS continued to have three partners, albeit rather disparate: the simulation people, the computer part of the giant IEEE, and all of ACM.

A horrid thing happened in 1967. Having outgrown all other eastern exhibit facilities, the Joints began meeting in Atlantic City—the SJCCs, that is. Five out of the six, through 1972, were held there; the 1969 was shoehorned into Boston, but hotel and exhibit facilities were completely swamped, and we retreated to Jersey. I remember the Boston meeting largely because I flew from the last moments of the ACM Council, to which I had been elected the year before, all the way to Tokyo—and made a major speech a few hours later. I was based at the Bureau of Standards by then, and flew the same year to meetings in Novosibirsk; it was 1970 before my jet lag wore off!

Shortly after I came to NBS, I had had the sad privilege of helping award the Harry Goode medal to Sam Alexander—three times. The award was to be made at FJCC 67, in Anaheim, but we all feared Sam, one of the great figures of all the Joints from the very earliest days, might not be able to make it. So we gave him a blank medal at ACM 67, which fortuitously met only a few blocks from his house in August. Then when the engraving was done, the director of the Bureau and I gave it to him again. And indomitable Sam flew out to California in November, and got it again, in formal ceremony. He died less than a month later.

Another departure, less tragic of course, was Charlie Asmus leaving AFIPS. More than any other person, he had built up the exhibits, to the huge, million-dollar extravaganzas of the Sixties. He and I had worked together, inside and outside the Joints, since 1954. He still attends; he still organizes meetings all over the world—but the Joints missed him. The last WJCC to meet in San Francisco was in 1968. There were nearly a hundred unaccommodated potential exhibitors, in addition to the 130 who showed. The hotels were swamped; people flew in from Los Angeles and went back the same night. Fees were up, to $20. There were complaints. Las Vegas was better, while the aerospace euphoria of the Sixties lasted, but in the end, with deflation, Puritanism prevailed: too many bosses thought the attendees, papers or exhibits, to the contrary, were really bucking the tables. Not true, in my opinion—but it was a dour time. No more Vegas!

We tried Houston, and the Astrodome complex held us nicely. But the hotel/motel accommodations were scattered; the personal and intellectual and sales contacts suffered. It was the era of the shuttle bus: the Joints were swollen!

They had eaten up the DPMA annual show and the ACM exhibits. They had completely changed the various electronic trade shows: pulled out the major systems, left components and modems and lemon-squeezers. Now they in turn began to suffer. "Too much," the manufacturers said, "We have overseas shows, where the market is skyrocketing, and where sales are actually closed at the booth. We can't afford two huge Joints every year, all the special shows for bankers and retailers, and Paris and London and Hannover.” So they began to pull out. The papers poured in as always; the attendance stayed up; the income side of the AFIPS ledger, though, showed the strain. And by this time the Federation included other, less seasoned, societies, societies that were not so sure computers would keep on growing at the old, crazy pace.

So the JCC Committee, of which I was again a member, asked the big boys—the IBMs, the UNIVACS, the Burroughses—what to do. “Cut back to one national show a year, and hold it only in New York or Chicago or Anaheim," we were told. And, moaning and complaining, we did. Growth resumed.

Most of the big exhibitors came back—you will see them at NCC76. We have tens of thousands of attendees at the exhibits, thousands at the technical sessions. Ten or more sessions run in parallel, fandishly planned (like prime-time TV) so that the best papers compete.

The booth birds are not quite so sexy; Women’s Lib has had a say. The recruiting is not quite so vigorous. The hospitality suites are harder to find. Social issues flourish; we deplore EFTS in the panels, and sell its hardware and software like mad in the exhibit hall. Yes, the Joints are gone: the NCCs have taken over. Most of the big exhibitors came back—you will see them at NCC76. We have tens of thousands of attendees at the exhibits, thousands at the technical sessions. Ten or more sessions run in parallel, fandishly planned (like prime-time TV) so that the best papers compete. The booth birds are not quite so sexy; Women’s Lib has had a say. The recruiting is not quite so vigorous. The hospitality suites are harder to find. Social issues flourish; we deplore EFTS in the panels, and sell its hardware and software like mad in the exhibit hall. Yes, the Joints are gone: the NCCs have taken over. They have everything, and are most kind besides.

I would like to express my thanks to the Stanford University Computer Science library. They have everything, and are most kind besides.