Chairman’s Letter (p. 1) “The Computer Group is continuing its growth and is now approaching 12,000 members as compared to somewhat over 11,000 at the beginning of the year. If we are to continue this growth and maintain a dynamic leadership in the computer community, we need active participation from a larger segment of this membership. At present, active members from Technical Committees, the Administrative Committee, and its operating committees, and Chapter officer and committee members number at most 600 people.” [Editor’s note: IEEE CS is constantly trying to improve its offerings to members; however, this will only work if the members themselves become actively involved in the programs.]

A System for Information Dissemination and Retrieval (p. 1) “Each week, the BPA (Bonneville Power Administration) library selects 125 abstracts from American and foreign professional literature on power transmission, our major area of interest. These abstracts are then converted to punched cards for processing, in free narrative form with no more restrictions on format than in typing the usual letter. It is our goal to accumulate nearly all of the noteworthy literature in the power transmission field—a figure we estimate on a worldwide basis to be 6,000 articles per year.” [Editor’s note: In 1967, providing current and focused information to researchers and engineers—using printed output physically delivered to readers—was a pioneering application. Today, of course, we have Wikipedia, digital libraries, Google, Yahoo, and innumerable others that provide global online services and are easily adjusted to suit user preferences.]

Language Survey Part II (p. 8) “This paper reports on the following languages: ALTRAN, AMBIT, COGENT, COMIT, CONVERT, CORAL, DYSTAL, FLIP, FORMAC, FORMULA ALGOL, IPL-V, LISP-I, LISPZ, L6, PANON, SLIP, SNOBOL, and TRAC. … In the September issue of the [Computer Group] News, the papers described properties that members of the group have in common. It gave a brief description of each language in the group including an excerpt from a program in the language that demonstrates the kind of problem for which the language is well known and compared the features of the languages in the group. In this issue, we complete the article with the presentation in Appendix III of Annotated Sample Programs for these languages.” [Editor’s note: Very few of these languages have had any lasting impact on the field, but a comparison of their features reveals the thinking of that time.]

Workshop on Interactive Languages (p. 20) “Growth in the use of interactive languages is phenomenal. This is one of the inescapable conclusions in evidence to over 20 attendees at the Cleveland Workshop, 3–4 August. … Much discussion focused on the languages themselves as well as methods of classification and evaluation. Of equal interest were the characteristics of the interactive systems themselves.” [Editor’s note: Languages discussed included TRAC, APL, BASIC, AMTRAN, LISP, and JOSS. Again, only a few of these languages found wide acceptance in the computing field.]

Molecular Computing: The Lock-Key Paradigm (p. 11) “The powerful information-processing capabilities of biological systems derive from molecular mechanisms unique to carbon polymers. … A variety of macromolecules of a non-biological nature exhibit optical or conductivity properties...
of potential significance for information technology. Carbon polymers that exhibit astonishing metal-like properties are one example. The chief feature of such conducting polymers is that the carbon atoms are linked by alternating single and double bonds. This permits electrons to move down a chain of atoms, but it is incompatible with the chain’s folding into a definite 3D shape.”

**Biologic Computational Building Blocks** (p. 22) “The electron kinetic behavior of enzymes controls cell bioenergetics. It also defines a molecular-level logic that has evolved over millions of years and might support future computational structures. ... Enzymes known as oxidoreductases are often associated with the membranes and internal structures of living cells. They act as the chief regulators of bioenergetics—the energy flow within a cell. ... Given that we can represent the action of an enzyme by a state diagram, we now wish to consider the modeling of an enzyme by a digital logic circuit. We could implement our enzyme model through either synchronous or asynchronous sequential logic.”

**Conformational Automata in the Cytoskeleton** (p. 30) “We describe the structure and conformational dynamic changes that occur in cytoskeletal proteins within living cells and evidence for their participation in computational processing. We discuss cellular automata in which lattice subunits with discrete states interact only with nearest neighbors. Simple rules governing subunit neighbor interactions can lead to complex behavior capable of computation.”

**Nondiscrete Biomolecular Computing** (p. 51) “Nondiscrete biomolecular information processing devices can effectively solve some problems with high computational complexity—for example, image processing operations such as contour enhancement and line extraction. ... Of the different structural levels, the supramolecular systems (biochemical reactions in cells and membranes) might be the most suitable for implementing information processing devices.”

**Protein-Based Optical Computing and Memories** (p. 56) “The retinal pigment rhodopsin helps vertebrates see in dim light. A similar biological material, the light-harvesting protein bacteriorhodopsin, shows promise for optical data storage and manipulation. ... The future impact of biomolecular optoelectronics on computer architecture remains to be fully revealed, but many in the scientific and business communities have concluded that it might represent one of the key emerging technologies of the next decade.”

**Hot Topics** (p. 78) “The behavioral repertoire of each robot was carefully designed in a bottom-up fashion, beginning with a module for collision detection and avoidance, adding a superordinate module to wander about while avoiding collisions, and then adding a next-higher module for directed exploration. Thus, at each developmental step, the robots could emit some appropriate behavior, which could gradually be elaborated with the addition of other modules.” [Editor’s note: Many of the approaches treated in these short articles are found in today’s AI or robotics systems.]

**International Software Piracy** (p. 87) “Many software developers, computer engineers, and experts on copyright law argue that reverse engineering does not violate the Copyright Act. ... Since 1983, Congress has passed numerous laws strengthening intellectual property rights. Now, companies are using those rights not only to thwart piracy but also as competitive weapons. ... But court decisions in the US have steadily extended copyright protection for software to include the object code, the logic and sequence of the program, and the ‘look and feel’ of user interfaces. ... Many legal experts and software developers believe that the current system of protecting software has gone too far.” [Editor’s note: This discussion continues today and, in some instances, has led to multimillion-dollar lawsuits that resulted in consumers being restricted to ‘proprietary’ solutions that are less than the best, considering the state of the art.]