

# Current Comments

## ISI's "New" Index to Scientific Reviews (ISR): Applying Research Front Specialty Searching to the Retrieval of the Review Literature

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The word "review" is one of the more ambiguous terms in scholarship. To the humanist who reads such periodicals as *Metropolitan Museum Journal*, *Film Comment*, or *New York Theatre Critics' Reviews*, "review" implies an appraisal of the aesthetic quality of an artistic work or performance. Readers used to such publications as *New York Review of Books* or *Times Literary Supplement* might easily assume "review" to mean the critique of a book. In science, a review article is an annotated summary or critical digest of the literature of a given topic. But even in science, the line of demarcation is sometimes hazy: *Nature*, *Science*, *New England Journal of Medicine*, and many others devote special sections to the reviewing of new books.

These observations highlight the relative roles of reviews in the two cultures. When we started *Index to Book Reviews in the Sciences*™ (*IBRS*™),<sup>1</sup> we were attempting to fill a gap that numerous authorities had told us needed filling. Even now, having announced the demise of *IBRS* due to lack of significant interest,<sup>2</sup> we still receive comments urging us to continue the service—perhaps in a more modern online version. This is now under serious consideration.

When we started *Index to Scientific Reviews*™ (*ISR*™) nine years ago, we were trying to satisfy a similar need, which similar authoritative opinion had assured us existed.<sup>3</sup> As was the case with *IBRS*, the small group of libraries that do purchase *ISR* are quite enthusiastic

about it. One librarian in Oklahoma told me that *ISR* is his most-used reference tool. But one needs more than a few *aficionados* to make an information service a success. There is some evidence that ISI® did not adequately promote *ISR*. For example, there hasn't been a comprehensive description of *ISR* in *Current Contents*® (*CC*®) since it was first introduced in *CC*.<sup>3</sup> Nevertheless, after so many years, one might expect that it would be known to more institutions and scientists, regardless of the promotional effort.

The importance of scientific reviews to the advancement of science has often been discussed in *CC*.<sup>4,5</sup> Citation studies have shown that review articles frequently become "core" or milestone papers in a field, and that review journals consistently achieve high impact. A good scientific review combines the exhaustive, synthesizing treatment of an encyclopedia with the currency and topicality of a scientific journal. I have even proposed that the writing of scientific reviews be accorded the same professional status enjoyed by other scientific disciplines.<sup>5</sup> It is with such a goal in mind that ISI, together with Annual Reviews, Inc., established the National Academy of Sciences James Murray Luck Award for Excellence in Scientific Reviewing.<sup>6-9</sup>

Some of the review literature has been identified and indexed by various abstracting services for years. But such services were limited by their own subject coverage restraints, and were often six

SPECIFICATIONS

*What it covers:* *ISR* indexes approximately 26,000 review articles drawn from over 3,000 primary journals and periodic review serials, covering a spectrum of over 100 subject disciplines in the sciences, medicine, and technology.

*Format:* Reviews contained in *ISR* are indexed in four separate reference sections, each employing a different method than the others but cross-referenced for ease of searching. The Source Index provides a complete index to the authors of the year's review articles. The Permuterm® Subject Index (PSI) lists significant words and word pairs from the titles of reviews as well as research fronts. The Corporate Index arranges source items according to the authors' organizational affiliations as well as their geographic locations. The new Research Front Specialty Index replaces the Citation Index; research front specialty searching is, in effect, a generic, multiple, and simultaneous citation index search for the subject area's core literature. Each semiannual cumulation for the 1982 *ISR* lists over 2,000 most-active research fronts.

*Publication schedule:* Two hardcover semiannual cumulations, each covering a six-month period.

*Cost:* \$300 for main libraries; \$150 for individuals and departmental libraries.

months to three years out of date. Thus, prior to *ISR*, no comprehensive, multidisciplinary index for scientific reviews existed. Anyone seeking reviews was often forced to perform a series of consecutive and duplicative searches in a number of separate abstracting and indexing services—a time-consuming process. After all, even though more are needed, there are from 30,000 to 40,000 reviews and “review-type” articles published each year in the thousands of journals and monographic serials *ISI* covers. Review-type articles include those research papers which contain so many references that they perform the review function. So when we launched *ISR* in 1974 to fill this “obvious” need, we expected something of a bonanza. After all, *ISR* is not priced much differently than *CC*. Why wouldn't everyone want it?

Well, nine years later we are still wondering why. So we decided to look into the possible reasons. In order to produce *ISR* at a low cost, as a by-product of *Science Citation Index*® (*SCI*®), it was designed as a mini-*SCI*. It contained a Source Index, providing a complete author index to a given year's review literature; a Permuterm® Subject Index (PSI), listing significant words and word pairs from the titles of reviews; a Cor-

porate Index, which arranges source items both by authors' organizational affiliations and their geographic location; and a Citation Index. Thus, the information contained in *ISR* was accessible in the same way as in *SCI*. Apparently, few *SCI* subscribers saw any advantage to having reviews treated separately from other types of articles. And for other, undiscerned reasons, smaller libraries did not see this need. So after much soul-searching, we decided to remodel *ISR*. Unless it had something unique to offer, it seemed doomed to fall by the wayside. *ISR* has now been redesigned to offer something new, both to *SCI* subscribers and to those who have never bought *SCI* before.

In the 1982 *ISR*, the Citation Index section has been replaced with a new Research Front Specialty Index similar to that being used in our online services—*ISI/BIOMED*™,<sup>10</sup> *ISI/CompuMath*™,<sup>11</sup> *ISI/GeoSciTech*™,<sup>12</sup> and *ISI/BioChem*™. *ISI/BioChem* is a new online data base that will be available by 1983. Each of these data bases represents a large slice of our multidisciplinary files. Oddly enough, however, we have not yet applied research front indexing to *SCI* itself. This seems strange in retrospect, since we have been reporting to you significant findings based on

clustering *SCI* files for many years. In fact, we have been clustering *SCI* every year since 1972 for our own scientometric research.

One reason for replacing *ISR's* Citation Index with a Research Front Specialty Index is our desire to test the concept of printing a comprehensive, multidisciplinary list of research fronts. We took a step in this direction by publishing the indexes to research fronts in *ISI/BIOMED*, *ISI/CompuMath*, and *ISI/GeoSciTech*. These indexes list several thousand research fronts we have named for each of the disciplines in-

involved. Now, the first six-month issue of the interdisciplinary *ISR* will list more than 2,000 of the roughly 3,500 research fronts generated each year in our *SCI* computer runs. To give you an idea of what *ISR* contains, we have identified the top 15 research fronts—in terms of the number of published reviews—in the life sciences; clinical medicine; and physical, chemical, and earth sciences. These appear in Tables 1-3.

We had planned to present a separate list of the top 15 chemical science research fronts in *ISR*. However, we found that only a few of the "traditional-type"

**Table 1:** The top 15 *ISR*™ research fronts assigned to the life sciences. The numbers in parentheses indicate the number of review and "review-type" articles published during the first six months of 1982 and contained in each research front.

Code Number	Research Front Name
82-0939	Protein synthesis, biochemical analysis of proteins, gene expression, DNA sequence studies and antigen-antibody studies (154)
82-0139	Cloning and characterization of genes (76)
82-0008	Structure and function of fibronectin and its role in cell adhesion and cell growth (72)
82-0459	Organelle genes, protein synthesis and transfer and membrane assembly (72)
82-0391	Ion conductance (64)
82-0032	Characterization and localization of intermediate filaments and cytoskeletal structures (57)
82-0352	Calmodulin and calcium regulated processes (56)
82-0457	Superoxide anion in macrophage antimicrobial activity and effects on mammalian cells (54)
82-0047	Role of prostacyclin, prostaglandins and platelet function in coronary artery disease, atherosclerosis, ischemic heart disease and diabetes mellitus (53)
82-0804	Biochemical studies of collagen and its occurrence in basement membrane and tissues (52)
82-0043	Characterization and synthesis of membrane glycoproteins (51)
82-0015	T-cell studies and investigations of interleukin-2, IA-antigens and HLA-antigens (50)
82-0094	Purification and characterization of nuclear ribonucleoprotein particles (50)
82-0436	Social and biological aspects of evolution (50)
82-0136	Enzymes, membrane markers and immunological diagnosis and monitoring of leukemia (49)

**Table 2:** The top 15 *ISR*™ research fronts assigned to clinical medicine. The numbers in parentheses indicate the number of review and "review-type" articles published during the first six months of 1982 and contained in each research front.

Code Number	Research Front Name
82-0794	Prostaglandins, immune response and cancer (55)
82-0544	Clinical studies of coronary artery spasm (30)
82-0510	High-density lipoprotein levels in vascular diseases and as affected by exercise and diet (29)
82-0441	Disease states in man related to and metabolism and function of vitamin D (26)
82-0029	Platelets and atherosclerosis (22)
82-0904	Bone marrow transplantation (21)
82-0001	Non-A-non-B hepatitis infections, hepatitis-A infections and hepatitis-B infections (20)
82-0193	Role of T-cells in autoimmune diseases (19)
82-0396	Exercise, amino acid metabolism and other metabolic pathways (19)
82-0555	Estrogen use and breast cancer and endometrial cancer risk in women (17)
82-0440	Ultrasound, computed tomography and TC-99M cholecintigraphy of liver and biliary tract (16)
82-0127	Clinical studies of non-Hodgkins and other lymphomas with emphasis on classification (15)
82-0815	Clinical studies and therapy of prolactinoma (15)
82-0400	Pneumococcal vaccine and splenectomy (14)
82-0237	Captopril and angiotensin inhibition in congestive heart failure (12)

**Table 3:** The top 15 *ISR*<sup>TM</sup> research fronts assigned to the physical, chemical, and earth sciences. The numbers in parentheses indicate the number of review and "review-type" articles published during the first six months of 1982 and contained in each research front.

Code Number	Research Front Name
82-0578	Geochemistry of basalts in relation to island arc magmatism and crustal development (71)
82-0703	Chemical composition and structure of globular clusters, extragalactic objects, and gaseous nebulae (64)
82-0312	Grand unified theories, proton decay, neutrino masses, flavor dynamics, and Higgs boson in the SO(10) model (48)
82-0181	Perturbative quantum chromodynamics, hadron jets, structure functions, and quarks (35)
82-0397	Coupled cluster and perturbation theory for electron correlation (33)
82-0684	Structures and fluxional behavior of transition metal cluster carbonyls (31)
82-0093	Neutral hydrogen observations, CCD photometry, and the spectral properties of galaxies as distance indicators (31)
82-0313	Relations between cosmology and grand unified theories, elementary particles, phase transitions and black hole production (30)
82-0314	Lattice gauge theory, quark confinement, and strong and weak coupling (28)
82-0315	Flavor dynamics of quarks and leptons, Higgs particle mixing, and the structure of neutral currents (28)
82-1454	Dynamical modeling of galaxies: stellar mass loss, globular cluster winds and distribution of luminosity (27)
82-0565	Catalytic hydrogenation of carbon monoxide (26)
82-1062	Isotopic anomalies in meteorites in relation to solar system formation (26)
82-0682	Electron transfer reactions (25)
82-0183	Quarkonia, interquark forces, flavor independence, and charmed particles (21)

chemistry research fronts we identified had published many reviews. This doesn't mean that *SCI* clustering has failed to identify the active chemistry research fronts. On the contrary, we could provide dozens of examples, like "Water cleavage into hydrogen and oxygen by visible light" and "Dynamics of dilute and semi-dilute polymer solutions." But for the period of time covered in this *ISR*—the first six months of 1982—there do not appear to be many review articles published on these subjects.

I have described research front specialty searching in detail in previous essays.<sup>10,11</sup> Through citation analysis, ISI's research staff has found that current articles can be organized or classified according to the clusters of older "core" papers they cite in common.<sup>13,14</sup> When named, these clusters identify active research subspecialties. A search in *ISR*'s Research Front Specialty Index is, in effect, a generic citation search of the core literature of the specialty. Incidentally, to use *ISR* it is not necessary to identify individual cited papers or authors—this cited core has already been identified by ISI. Thus, although the

Citation Index has been eliminated, the classification value of citation searching has been retained and in some respects enhanced in *ISR*.

There are some interesting by-products of this revision. First, it provides us with the opportunity to test the concept of eventually including a Research Front Specialty Index in the much larger *SCI*. Second, it affords a simple way of publishing a list of more than 2,000 scientific research fronts whose existence has been confirmed by one or more reviews. This should prove interesting reading for research administrators and others interested in science policy. It should also interest journal editors, since, at a glance, they will be able to identify topics for which there is a paucity of reviews. Indeed, this idea begs for the eventual listing of *SCI* research fronts for which no reviews are reported in 1982. In that sense, *ISR* would be a different kind of mini-*SCI*.

The Research Front Specialty Index itself is a listing, arranged by specialty number, of all research front specialties in a given semiannual edition of *ISR*. Each entry contains the full name of the

research front, as well as a list of source articles in that issue of *ISR* that have cited the core literature of the specialty—in other words, a bibliography of current review articles in a particular specialty field. A sample entry from *ISR*'s Research Front Specialty Index appears in Figure 1.

Each research front specialty is named by ISI subject specialists using computer-generated lists of words or phrases that appear in the titles of current papers. These review papers have been defined as relevant because they cite the core literature of the specialty. Thus, each research front specialty name accurately reflects the terminology actually used by scientists publishing in the field. Another advantage of ISI's process for defining research front specialties is that these specialties are redefined annually to reflect the dynamics of scientific research.

**Figure 1:** A sample entry from *ISR*'s new Research Front Specialty Index. In this example, the entry begins with the research front specialty number, 82-0620. The research front specialty name follows immediately. Arranged alphabetically beneath that are the authors of articles assigned to the research front. The journal in which each article appears is indicated to the right of the author's name, along with the volume, first page, year published, and the "specialty weight" number. Specialty weight is the number of core papers in the specialty that the article cites.

### 82-0620

#### ERYTHROCYTE-MEMBRANE CYTOSKELETAL PROTEINS

ALLORE RJ	CAN J BIOCH	60	57	82	[05]
BENNETT V	J CELL BIO	18	49	82	[13]
GARBARZ M	PATH BIOL	30	109	82	[05]
GARBARZ M	SEM HOP PAR	58	1005	82	[13]
GRANGER BL	J CELL BIOL	92	299	82	[01]
HYMES RO	CELL SURF R	7	99	81	[03]
KAKIUCHI S	SEIKAGAKU	53	1267	81	[06]
KORN ED	PHYSIOL REV	62	672	82	[04]
ROBERTSON JD	J CELL BIOL	91	5189	81	[01]
STOSSEL TP	CELL SURF R	7	139	81	[02]

### 82-0621

#### MESSANGER-RNA NUCLEOTIDE-SEQUENCE COMPLEXITY

BROOKFIELD JF	J THEOR BIO	94	281	82	[01]
ILYIN YV	CRC C R BI	12	237	82	[01]
KOROCHNIK LJ	MOL BIOL	15	743	81	[04]
KOVESDI I	DEVELOP BIO	89	56	82	[02]
MOYZIS RK	J MOL BIOL	153	841	81	[01]

**Figure 2:** A sample entry from the Geographic Section of *ISR*'s Corporate Index. The main heading shows the name of the country (or, for the US, the name of the state, as in this example), followed by the name of the city. Listed in alphabetical order beneath the city entry are the titles of the various organizations to be found at that location. The figure shows that V. Bennett, author of one of the papers contained in the research front shown in Figure 1, is affiliated with Johns Hopkins University, School of Medicine, Department of Cell Biology and Anatomy, Baltimore, Maryland.

## MARYLAND

### BALTIMORE

• JOHNS HOPKINS UNIV		VOL	PG	YR
• SCH MED				
DARG CV	MED HYPOTH	7	1317	81
DEPAULO JR	PSYCHOSOMAT	23	261	82
EBBUGHU L	PEDIATRICS	68	530	82
HÖCHBERG MC	EPIDEMIO. B	3	27	81
MCKNARR GM	ANN & NEUR	5	219	82
ROBINSON JC	SURGERY	91	386	82
• CTR ONCOL				
- CELL STRUCT & FUNCT LAB				
ROBINSON SI	CELL	28	99	82
• DEPT ANESTHESIO				
KAUFMAN LJ	INT J QUANT	1981	419	81
• DEPT BIOPHYS ENER				
SURAGAWA K	CRC CR BIOL	7	193	82
• DEPT CELL BIOL & ANAT				
AERI U	ULTRAMICROS	8	191	82
BENNETT V	J CELL BIO	18	49	82
CRANG SW	TRENDS BIOL	7	98	82
LIDOV NGW	DEV BRAIN R	3	81	82
POLLARD TD	J CELL BIOL	91	5136	81
-	TRENDS BIOL	7	53	82

**Figure 3:** A sample entry from *ISR*'s Source Index. In addition to full bibliographic information, the Source Index provides the code numbers of the research fronts in which each source item appears, and the reprint address. The numbers at the far right indicate the number of references each source item contains.

BENNETT DV				
COCK EF—THE SEMI-AQUATIC HEMIPTERA OF MINNESOTA				
(HEMIPTERA, HETEROPTERA)				
MINN AES 78	1981(332):1-59	81	240R	
UNIV CONNECTICUT, HARTFORD, CT 06112, USA				
BENNETT V				
THE MOLECULAR-BASIS FOR MEMBRANE - CYTOSKELETON				
ASSOCIATION IN HUMAN-ERYTHROCYTES				
J CELL BIO	18(1):49-65	82	100R	
SP: 82-0032(01); 82-0327(01); 82-0620(13);				
82-0623(02); 82-1092(05)				
JOHNS HOPKINS UNIV, SCH MED, DEPT CELL BIOL & ANAT,				
BALTIMORE, MD 21295, USA				
BENNETZEN JL				
HALL BD—CODON SELECTION IN YEAST				
J BIOL CHEM	257(6):3026-3031	82	47R	
SP: 82-0094(02); 82-0154(01); 82-0455(01);				
82-0459(01); 82-1018(01); 82-1048(01);				
82-1311(01); 82-2188(01)				
UNIV WASHINGTON, DEPT GENET, SEATTLE, WA 98195, USA				

The Research Front Specialty Index is accessible through a number of new entry points added to the PSI and Source Index. (The Corporate Index, shown in Figure 2, will remain unchanged.) In the Source Index, each source entry contains a list of the research front specialties to which that article is assigned. In this way, the name of a publishing au-

thor may be used as an access point to retrieve a subject bibliography from the Research Front Specialty Index. Source entries also include an indication of the paper's "specialty weight"—that is, the paper's relevance to the specialty as determined by the number of core papers that it cites.

There are many papers published on subjects that are not necessarily as active as others at the "forefront" of scientific research. Therefore, some articles will not be assigned to any of the research front specialties we have listed. Some of these, however, are papers which by themselves may identify unique new areas of research in which there are not yet enough publications to exhibit co-citation patterns. A sample entry from *ISR*'s new Source Index appears in Figure 3.

In the PSI, significant words from the names of research front specialties are listed both as primary and as co-terms, and are accompanied by the research front specialty number. The significant title words from all source articles will continue to be permuted in the PSI, regardless of whether or not they belong to the research front specialty. In this way, the PSI can now be used to locate research front specialties on specific subjects as well as to perform direct searches of source article titles. Figure 4 shows a sample entry taken from the PSI.

It is interesting to compare the results of title word indexing with those of searching via research front classification. One is not necessarily better than the other—just different. We believe that research front indexing provides a far more specific entry, especially considering that we are dealing with highly active fields.

Still another major change in the 1982 *ISR* concerns non-journal coverage. Concurrent with present *SCI* policy, multiauthored book coverage in *ISR* has been modified. After careful analysis and selection of the most important

Figure 4: A sample display of *ISR*'s Permuterm<sup>®</sup> Subject Index. Here, the main entry, "cytoskeleton," is paired with 23 other terms. Following each permutation is the author of the individual review article containing these terms in its title. If the terms are used in the title of a research front specialty, the specialty number appears. For example, specialty number 82-2011 is the code number for the research front entitled "Cytoskeleton disruption by cytochalasin and cellular effects." Thus, the specialty number appears under "cytoskeleton" and next to "cellular," since these terms are used in the title. The same principle applies to the other two research fronts listed in this example: 82-0819, "Membrane cytoskeleton interactions during endocytosis and exocytosis"; and 82-2006, "Cytoskeleton and microtubule assembly."

<b>CYTOSKELETON</b>		<b>CYTOSOL</b>	
ASSOCIATION	◊ BENNETT V	ANTI-ESTRO	◊ SP: 82-1220
AXONAL	◊ MORRIS JR	AORTA	◊ KORNEL L
CELL-SURFA	◊ SCHROEDE TE	BINDING	◊
CELLULAR	◊ SP: 82-2011	ESTROGEN-R	◊ SP: 82-1220
CLEAVING	◊ SCHROEDE TE	GLUCOCORTI	◊ KORNEL L
CYTOCHALAS	◊ SP: 82-2011	HIGH-AFFIN	◊
DISRUPTION	◊	INTERACTION	◊ SP: 82-1220
EFFECTS	◊	MINERALOC	◊
EGGS	◊ SCHROEDE TE	NUCLEAR	◊ SP: 82-1220
ENDOCYTOSIS	◊ SP: 82-0819	RABBIT	◊ KORNEL L
EXOCYTOSIS	◊	STUDIES	◊
FIBRONECTIN	◊ HYNES RO	<b>CYTOSTATICS</b>	
HUMAN	◊ GARBARZ M	ACTIVATION	◊ KOLAR GF
HUMAN-ERYT	◊ BENNETT V	CYCLOPHOSP	◊ BROCK N
INTERACTIO	◊ SP: 82-0819	DEVELOPMENT	◊
INTERRELAT	◊ SCHROEDE TE	IFOSFAMIDE	◊
MEMBRANE	◊ SP: 82-0819	INHIBITION	◊
MICROTUBUL	◊ SP: 82-2006	MESHA	◊
POLYMERS	◊ MORRIS JR	METABOLIC	◊ KOLAR GF
RED-CELL	◊ GARBARZ M	OXAZAPHOSP	◊ BROCK N
RELATIONSH	◊ HYNES RO	SIDE-EFFEC	◊
SEPARATION	◊ SCHROEDE TE	TRIAZENE	◊ KOLAR GF
STABLE	◊ MORRIS JR	UROTOXIC	◊ BROCK N

titles, over 150 essential monographic serials have been retained in *ISR*. Any non-journal materials that were not selected for inclusion in *ISR* are now accessible in the *Index to Scientific & Technical Proceedings & Books (ISI/ISTP&B™)*.<sup>15</sup> This online data base covers the total content of the printed *Index to Scientific & Technical Proceedings® (ISTP®)*, plus chapter-by-chapter indexing of all other types of multiauthored books from the entire *ISI* data base. This year's changes in non-journal coverage in *SCI* and *ISR* minimize duplication of indexing with *ISI/ISTP&B*. *ISI/ISTP&B* is available through Telenet and Tymnet on the *ISI Search Network*.

*ISR*'s publication schedule will also change. It will appear in two hardcover semiannual cumulations, each covering

a six-month period. The previous schedule of a six-month edition followed by an annual cumulation increased printing costs. Now each search in an *ISR* semi-annual will produce a unique set of review articles. In addition, *ISR*'s dimensions will be reduced from the current 9 3/8 × 11 5/8 inches to 8 1/2 × 11 inches. This will facilitate photocopying search results.

A final important change is the new differential pricing for *ISR* in 1982. It is our intention to get *ISR* into the hands of as many research administrators as possible. For this reason, it now costs \$300 for main libraries and \$150 for individuals and departmental libraries. We have implemented this pricing policy to encourage subscriptions from smaller departmental libraries which cannot afford *SCI*, but which can benefit from access to the scientific review literature.

It has been suggested that *ISR* might be used more conveniently in an online version. This is being explored. I suspect that we can make the decision to do that in the near future, depending upon a number of other factors. In a short time, all ISI online data bases will have online research front indexes. These complement the printed versions. From those will be created a master index of all research fronts. In addition, the core papers associated with each research front will be retrievable. We believe that such a comprehensive list of core papers in science would provide a valuable service. Given a core paper, one could then identify the appropriate research front, and thereby find the most current review.

When Puck said, "Oh what tangled webs we weave," in Shakespeare's *A Midsummer Night's Dream*, he might

well have been describing the complexity of interconnected ideas that make up modern science. I have no doubt that much of what I have said about *ISR* must seem excessively complicated, but science is not always susceptible to simplification. Indeed, what may be missing from the *ISR* research front indexing system is another hierarchical level to help bridge the gap between alphabetic classification—which, in terms of much subject searching, is a random arrangement—and the subject specificity of research fronts. We refer to this at ISI as "clustering clusters." It is a peculiarity of our research front indexing system that the level of specificity increases as the citation threshold for the selection of core papers is increased. To make research fronts "broader," the threshold is lowered, but the naming becomes less automatic. We are now working on methods for refining these techniques even further.

Inquiries about the new *ISR* may be directed to Gerald Francis, manager of product development, ISI, 3501 Market Street, University City Science Center, Philadelphia, Pennsylvania 19104. Or you may call toll-free at (800) 523-1850. In Pennsylvania, call collect at (215) 386-0100. Readers abroad may contact the offices listed at the beginning of each issue of *CC*. You may also telex your inquiries to us at 84-5305.

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