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POSTHARVEST INSTITUTE FOR PERISHABLES

RECOMMENDATIONS FOR PITALPRO LIBRARY IMPROVEMENT

Faculty of Science & Food Engineering, Ambato

A Report Prepared
by
Paulette Foss George
Information Specialist

from the
Postharvest Institute for Perishables
University of Idaho
Moscow, Idaho

GTS Report No.
PIP/Ecuador/Mar 85/No. 65

University of Idaho

in cooperation with
United States Agency for
International Development

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EXECUTIVE SUMMARY

Within the Facultad de Ingenieria de Alimentos (EIAL) of the Universidad Tecnica de Ambato (UTA) in Ambato, Ecuador there is a small food technology library which the Dean of EIAL wanted to improve. At his request, their operations were surveyed. In addition to the problems of information acquisition and exchange within the library there is a broader problem of information management within the entire Faculty.

The library, while small, is very heavily used and efficiently run. The major limitation is access to current bibliographic information and copies of current journal articles. There are no interlibrary loan programs extant within Ecuador at this time, and the resources of this library can extend to only the 20 most important journals in the field. There is a need for linkages to external resources and for a way to keep track of non-book materials within the library, especially as these more ephemeral materials are expected to become an increasingly important part of the collection.

Both the administrative and the research units of the Faculty are also suffering problems of management of information. Currently there are no automated facilities of any kind within either EIAL or the university as a whole. As a result, production of required extension/diffusion materials, administrative reports and financial recordkeeping must all be done by hand. The faculty is currently overextended with its teaching/research/extension activities and is not producing the materials needed by the PITALPRO subgrant funded by USAID.

It was recommended that the library be improved through the installation of a microcomputer system which will allow management of its contents using a library-oriented database management system. This same equipment can be used for electronic communications to link to a number of external agencies. (There are several different programs on the drawing board in Ecuador which will probably be of interest to the EIAL library in the next 3-4 years.) With the encouragement of USAID/Quito the same electronic system will be used to link UTA with the Postharvest Institute for Perishables at the University of Idaho in Moscow, Idaho to help them obtain current bibliographies and to order copies of journal articles.

With the additional capacity of the library's microcomputer system, it is envisioned that word processing capability will be developed to create a better communication system among the members of the EIAL staff and to improve usage of the resources already available.

The ability to use microcomputers to improve internal management within the library fostered the idea to apply microcomputers to the solution of some of the other problems within the administrative and research units of EIAL. The Dean of the Faculty is enthusiastic about the ability of his staff to use the microcom-

puters to increase their productivity and feels that the incentive given to his staff by the opportunity to utilize the very popular computer technologies will help him retain his most able staff members.

As a result, it was recommended that a microcomputer be installed in the research laboratory office to assist the researchers. Primary uses will be word processing to develop extension/diffusion materials required by the USAID-funded PITALPRO project and for the recording and analysis of data from various research projects to ensure accuracy and to eliminate tedious calculations now performed by hand.

Another microcomputer will be installed in the administrative offices to provide both word processing and financial analysis capabilities. The staff is extremely interested in the proposed project and obviously anxious to have the opportunity to use the new systems.

Short-term training for the computer system's manager is recommended to be performed at the University of Idaho for a period of 3-4 weeks. This will be followed immediately by installation of the equipment in Ambato and initial training of the staff of EIAL in the use of the various software packages. It is expected that the installation and debugging will take 3-5 days followed by a week's initial training.

A continuing involvement between the UTA-EIAL and the University of Idaho is expected, but the exact nature of it remains flexible depending on the needs of the EIAL staff. Periodic visits of staff in both directions is expected with a high likelihood of faculty exchanges.

Survey of the Current Situation

There are in reality two parts to the current situation concerning information management. There is the expected situation with inadequacies in the Facultad de Ingenieria de Alimentos (EIAL) library itself. But in addition there is a broader information management problem that could be classed as a lack of an integrated management information system which includes both the administrative staff and the laboratory or research staff as well as the library.

Description of the Library

In the library there is a book collection, a small collection of several years of about 20 journals, a small checkout area and four long rows of tables where about 65 students could be seated simultaneously. There is no more space for more materials and the seating is so close together that it is impossible to see how the users can actually accomplish much work.

The collection itself consists of a fairly recent collection of books (primarily in English) which number around 500 titles. In addition there are 21 journals and Food Science and Technology Abstracts available for journals. (See Appendix B for a complete list of the journals.) The collection is kept in locked glass cases on the periphery of the room, and is in good order. Books are classified using the Universal Decimal Code system common in European academic and technical libraries. Journals are bound and kept in alphabetical order on the shelves. The current budget is about S/. 500,000 annually, of which 20% goes for the journals.

Usage of the library is very high. According to the librarian there are about 90 students daily using the facility and its resources. This does not include the students just using the table space to study personal materials. Between 80 and 100 books are checked out daily with a circulation time of just over 1 week. A photocopy machine is nearby where articles from the journals may be copied. However, the impression is that very few journals are currently used.

Primary usage at this time seems to be students. Approximately 25% of the potential users of the collection actually use the collection each day. Sixth year students are required to write a thesis and seem to be some of the heaviest users of the library. The indication is that the faculty and researchers do not now make much use of the facility. This is probably because of the limited resources, particularly journal subscriptions. There is currently no system for any kind of interlibrary cooperation or exchange of materials. Anyone wanting to use materials at another library must go there to use them. In fact there are no union lists of serials or any other holdings to even indicate were needed resources might exist. It should be noted that

CONACYT will be describing its proposed system to create some union lists to representatives of the major universities in the country at a meeting in Guayaquil at the end of March. It is the opinion of those in Ambato, however, that any implementation of such activities will not be likely before 1987 or 1988.

At present there is no coordination of efforts by the librarian or anyone else regarding the research needs of the faculty. There seem to be various journals which are held in locations separate from the library which are serving as resources for individual projects. (It was not clear whether these were personal copies or purchased by the Faculty.) In addition there is at least one faculty member using the services of the Postharvest Institute for Perishables (PIP) and the British Library without the knowledge of the librarian. The result of these individual efforts is to aid the particular project, but without any benefit to others in the Faculty who now or later might need the same information.

Two of the 5 other libraries on the campus were visited: Social Sciences and Education. All of these libraries are totally separate and funded by the individual faculty where they are located. Emphasis in the two visited is on books, though the attitude toward their use varies. Open shelves encouraged use in the Education library, while all materials were behind a very pretty, but nonetheless inaccessible wall. Serials are few and sporadically maintained. Indices to journals seem to be non-existent. Demand for materials from faculty members seems to be very small, probably due to the small local collections and lack of any kind of integration with other facilities. Students and faculty may borrow from any of the libraries on the Universidad Tecnica de Ambato (UTA) campus, but this is not done very often since each library is so very specialized.

While there are plans to create a separate university library when the new campus is built, there is no indication as to when this might be. The plan is for the central library to be separate from the existing ones which will continue their current operations. The exact content of the central library seems to be only vaguely defined and the UTA staff has little thought about the effect it will have. Apparently the time of actual construction is so far in the future and the availability of funding adequate to build a decent central library so unlikely, that no one is counting on using any materials from that source for many years.

Description of Management Information Needs

Researchers. The needs of the research staff regarding information management are related to both their needs to provide accurate data for evaluation of their projects and to perform adequately their charge to develop adequate extension and diffusion regarding their research.

Currently there are no computer facilities within either the EIAL the Universidad Tecnica de Ambato as a whole which can be used to assist in any projects. This means that all research data must be laboriously collected by hand and all statistical and other analyses must be done by hand or at the most with the assistance of hand-held calculators. The obvious difficulties as well as extreme burden put on staff time are obvious. The accuracy of analysis is also more questionable than if there were computer-assisted means of recording and analysing data.

The effort to evaluate results of projects would be less difficult as well if there were more detailed records available to evaluators. Such records are more likely to be generated by computer simply because of the decreased effort required to produce and maintain them.

Much of the work related to successful extension and diffusion efforts begins at the written stage where course outline, course handouts, extension publications and a variety of other written materials form the basis for demonstration trips, workshops and other related diffusion activities. Since there is currently no simple way to produce even draft copies of such documents, less refinement of materials is done than is desirable. A terminal located near the work areas for faculty involved in these efforts would greatly improve both the quality and the quantity of materials produced in the dissemination efforts.

Currently there are 11 full-time, 2 half-time and 14 others less than half-time who are responsible for teaching 280 students, coordinating all teaching laboratories and performing all research within the Faculty. The work load on each of them is already heavy and increases with each effort to improve their Faculty. The administration of the Faculty is keenly aware of the problems inherent in asking more of the staff than can be realistically expected. Thus, the dean is very strongly interested in finding ways of improving productivity and offering new incentives to his staff within the current structure. He is very interested in possibilities for reducing rote work and at the same time training his professional and clerical staff in new, more productive means of accomplishing various tasks.

<u>Administration.</u> Proper accountability for the PITALFRO project falls upon the shoulders of the administrators of the Facultad even though the University is ultimately responsible. As is the case with the researchers, that lack of any computers or automation means that all activities must be performed laboriously and probably less accurately by hand.

One of the major requirements of the administration is justification for the expenditure of money and resources. Currently a manual bookkeeping system within the Faculty is forwarded to the central fiscal administration in the University where more hand-generated records are kept and periodically forwarded to the Ministry of Agriculture (formerly CONACYT) and USAID. With the recordkeeping abilities available through a microcomputer not

only could these records be kept more easily and accurately, but there would be the ability to forecast and plan the optimum usage of remaining funds during the period of the grant (and on into the future of EIAL.)

The process of producing documents to verify various activities required within the project is similar to the problem faced by the researchers in producing diffusion materials: less refinement is performed than might be desired due to the difficulty of revision and the staff time required for such repetitive tasks. Access to word processing would result in a more accurate and probably extensive documentation of project activities. This has the obvious advantage of verifying proper usage of resources and allowing more thorough evaluation of the project.

Needs and Parameters

This discussion will identify specifically the needs of first the library system and then of the general management information system. These needs will be stated in terms of parameters which any proposed solution must satisfy as far as possible. The parameters will be listed in order of their importance with similarly ranked requirements having the same number.

Library Parameters

1. Access as soon as possible to all materials in the collection regardless of format or language. This includes access by title, author(s), and most importantly subjects.

1. Timely access to resources outside the collection. This includes all levels from other units within the UTA, within Ecuador and external resources. Primary needs are for current bibliographic information and for copies of documents found in such bibliographies. Organizations known at this time to be important for linkage are: USAID/Quito and through them the University of Idaho and the Postharvest Institute for Perishables, CENDES, CONACYT, and the other universities in Ecuador, particularly the Escuela Politecnica in Quito.

2. System must be reliable and readily maintainable at the local level. Critical operating elements (telecommunications linkages, mass storage and cpu) should be duplicated locally if at all possible as backup in case of failure.

2. A system to coordinate information demands from all the faculty, staff and students within the Facultad is needed. This means implementation of an acquisition system responsive to needs and a communication system which informs users of library holdings.

2. A feedback procedure which evaluates fulfillment of requestor needs and tracks actual usage of information supplied must be integrated into the information demand cycle.

3. The system must be flexible to allow for changing uses locally and for integration into other systems later as desirable.

3. The system must be expandable due to expected growth in the local collection and future expansion of the system to serve others beyond the local clientele.

4. System must provide a simple process for cataloging all types of materials. Extensive training and time-consuming processes are unrealistic within the current staffing limitations.

5. The ability to read and make copies from any print medium is essential. This includes both fiche and microfilm.

5. Expense is to be minimized as long as other parameters are met.

6. All possible means of reducing storage and other space requirements for the collection must be considered in light of the inability to acquire more space within the near future.

7. Equipment to be of USA manufacture or at least purchased from distributors in the USA unless USAID agrees to other arrangements.

Management Information Parameters

1. Provide as soon as possible a system for Spanish and English word processing, budgetary recordkeeping and analysis, statistical and other required scientific analyses which can be integrated with the library's information management system as well as other local or potential national networks.

2. System must be reliable and readily maintainable at the local level. Critical operating elements (telecommunications linkages, mass storage and cpu) should be duplicated locally if at all possible as backup in case of failure.

3. System must be easy to learn to enable all necessary researchers and administrators to utilize the systems with a minimum of additional training.

3. Expense is to be minimized as long as other parameters are met.

4. Equipment to be of USA manufacture or at least purchased from distributors in the USA unless USAID agrees to other arrangements.

Recommendations

Listed first are five recommendations which apply throughout any system established within the Facultad de Ingenieria de Alimentos. Following that are several more related to the Library and to information management specifically. At the end of this section are lists of specific requirements for 1) equipment, 2) training and 3) external technical assistance.

General Recommendations

-- Three pc-based microcomputers should be purchased and placed as follows:

library
laboratory office
administrative offices

-- Software should be purchased initially to perform the following tasks:

database management (for library, research and administration)
word processing
financial record keeping and analysis
statistical analysis
telecommunications
engineering computations

Where possible, public domain software should be considered, but not at the cost of efficiency, reliability or ease of use.

-- One interested person should be assigned to duty of system manager who is then the primary authority on its use, troubleshooter, and coordinator of both time and supply usage. Training of other staff will be another primary function of the position. This is an essential part of the system and must not be a duty added to someone already occupied full time with other obligations.

-- The system manager should have off-site training on the equipment in order to learn both hardware and software installation, usage and troubleshooting without the interruptions inherent in on-site training.

-- The system should be installed and operational within 60 days of the receipt of the equipment at UTA.

Library System Recommendations

-- A centralized system for information requests should be developed with the librarian. The system for external communication to other agencies is intended to be an extension of the local resources so all requests must come through the library. This is intended to increase both the amount of

information being shared within the Faculty and to increase accountability within the system.

-- Training on the database system will be provided by the system manager, but the configuration of the system will be developed in close coordination with the librarian and possibly other information specialists.

-- A fully integrated database which can be searched in its entirety is essential to the functioning of the local system. Hence a storage medium large enough to allow complete subject/author/title retrieval is required. A 10 megabyte hard disk should be adequate for a five-year period.

-- Increased staffing will be necessary for the library due to the increased workload related to the higher demand for resources and the effort of creating and maintaining the local database. It is most likely that an addition of some clerical assistance would be sufficient rather than more professional help.

-- Journal subscriptions throughout the Faculty should be centralized, including any private journals that would be donated. This will allow their contents to be put on the local database and allow vastly increased access to their contents.

-- Communication with faculty (and students to the extent deemed desirable by the staff of the Faculty) should be increased. Information from the Library should include some kind of newsletter listing new acquisitions and other news on a regular basis. Generation of such reports is one factor to be considered in the selection of software.

-- Feedback from the users of the information system to the Library staff is an essential tool in tracking how well the Library is meeting needs and how this information is actually being used in support of projects. This becomes an important part of the evaluation process for both the Library and the entire PITALPRO project. Design of this kind of system should be in conjunction with the administration of the Faculty and possibly external information specialists.

-- At the current level of circulation (80-100 items/day) there is no real justification for computerization at this point. However, when books and other materials are being entered into the database, it would be prudent to bar code or otherwise make the books uniquely identifiable by a machine-readable process to enable ease of adopting a computer-controlled circulation system later.

-- With the addition of microcomputers, at least 1 microcomputer journal related to the specific equipment purchased should be added to the library collection to enable all the

staff to keep up with new developments and expanded uses for the local systems. The contents of this should be entered on the database.

-- Facilities for using all forms of print media should exist within the library. This particularly applies to microforms: microfiche and microfilm which are becoming increasingly important in the scientific fields.

-- A microform reader-printer should be purchased which will copy on plain paper and which uses a dry toner. The inability to get sufficient coated papers and liquid toners and dispersants makes other kinds of reader-printers impractical in the conditions found at UTA. Also the coated paper copies are not designed for either high sunlight or high humidity conditions and decompose rapidly.

-- Portable microfiche readers are a necessity as more materials become available on microfiche. This will save both staff time and resources in making copies of entire documents when only a few pages are actually required in print. Portability ensures that the user can carry the fiche and reader to his office or home as easily as using print. Fixed readers will discourage the use of microfiche and thus waste resources put into microform.

-- Due to the critical lack of space, acquisition of back issues of journals in microform should be considered in light of the great savings in space. Acquisition of as many new materials on microfiche as possible is also recommended.

-- Coordination with existing external resources should be continued, but centralized with the Library.

-- Due to the agreement of cooperation between UTA and the University of Idaho, the Postharvest Institute for Perishables and the University of Idaho Library have a continuing obligation to assist with the development of both the general information system and the specific operational problems which arise. Assistance should be sought freely by the UTA staff whenever needed.

Information Management Recommendations

Administration

-- All interested support staff should be given training on word processing and database management software in order to streamline as many operations as possible and provide trained staff in the event of personnel absences or departures.

-- All computer equipment should be available to trained staff as many hours per week as possible including nights and weekends. Policies should encourage personal use as far as permissible in order to increase staff skills and efficiency with minimal outlay to EIAL.

-- A high speed, letter quality printer must be available for final draft applications.

-- Logbooks to verify person using each machine, the amount of time used and purpose of use are recommended to justify usage and aid administrative accountability. A system to sign up for use of each machine or a schedule where certain hours are dedicated to specified persons or activities will also facilitate most efficient use.

-- Software should have Spanish language documentation, if possible. (A request with initial orders may give at least limited affirmative responses.) Where documentation is only in English, the system management should prepare brief guide sheets in Spanish to aid users.

Researchers

-- A budgeted amount of at least $1,000 be set aside for the purchase of software designed to assist in calculations and data analysis. This should be spent on the recommendation of both the relevant researchers and the system manager (with USAID concurrence).

-- Word processing with scientific notation capabilities should be available for report writing and extension material development.

-- Recording on the microcomputer of data from all research should be encouraged to allow better project administration and to provide evaluative assistance.

Specific Equipment Requirements

For the Library:

-- 1 IBM-PC XT

256k of RAM & 1 AST SixPakPlus with 384k additional RAM
1 5.25" dsdd disk drive
1 10 megabyte disk drive
1 monochrome monitor with non-glare screen
1 external modem
1 AST SixPakPlus with 384k additional RAM
8087 coprocessor
Hercules monochrome graphics card

-- 1 dot matrix parallel printer capable of printing library (roughly 3" x 5") cards (needs an adjustable width pin feed mechanism), suggest Epson or Okidata

-- 1 database management system, preferably Sci-Mate because of its use at USAID/Quito and its extreme flexibility and ease of use.

-- 1 multilingual word processing package, suggest Select Bilingual

-- 1 telecommunications software package. Recommend Smartcom since this is also extant at USAID/Quito and is becoming an industry standard

-- 1 Canon RP-70 plain paper dry toner microform reader-printer with both film and fiche capacity.

-- 2 portable microfiche readers. If available, recommend Fuji RFP-2 model as smallest, least expensive and best quality known.

-- 50 diskettes for backup of the system.

-- 1 streamer tape for hard disk backup, suggest Tallgrass or whatever USAID/Quito is using. 4 extra tapes for streamer tape backup.

-- Diskette storage file(s) to contain backup system.

-- Cables as required to attach all equipment

-- Power surge protectors for all equipment, suggest Networx Wire Tree Plus to protect from telephone and electrical spikes.

-- Equipment lock-down device for cpu

For the Laboratory Office

-- 1 IBM-PC or completely compatible clone such as the Zenith Z-150 with

256k of RAM & 1 AST SixPakPlus board with 384 additional RAM
2 5.25" dsdd disk drives
1 monochrome monitor
1 serial port interface
1 RS-232 C interface
8087 coprocessor
Hercules monochrome graphics card

-- 1 dot matrix parallel printer, suggest HP Thinkjet

-- 100 diskettes

-- Diskette storage files

-- 1 scientific word processing package, suggest Spellbinder/Scientific

-- $1000 for engineering analysis software purchase

-- Cables as required to attach all equipment

-- Power surge protectors for all equipment, suggest Networx Wire Tree Plus to protect from telephone and electrical spikes.

-- Equipment lock-down devices for cpu

For the Administrative Offices

-- 1 IBM-XT,
256k of RAM & 1 AST SixPakPlus with 384k additional RAM
1 5.25" dsdd disk drive
1 10 megabyte hard disk
1 monochrome monitor
Hercules monochrome graphics board
8087 coprocessor

-- 1 letter quality parallel printer

-- 1 external modem capable of using 110, 300 and 1200 baud speeds

-- 1 multilingual word processing package, suggest Select Bilingual

-- 1 Lotus Symphony financial software package

-- 1 Sideways software package for printing spreadsheets

-- 50 diskettes

-- Diskette storage files

-- Cables as required to attach all equipment

-- Power surge protectors for all equipment, suggest Networx Wire Tree Plus to protect from telephone and electrical spikes.

-- Equipment lock-down devices for cpu, printer.

Training Requirements

Off-site training will be limited to that received by the System Manager. All other training will be done at the Facultad facilities on the equipment which will be there. Primary responsibility for training of UTA staff will lie with the System Manager, though a two week initial period of technical assistance (see below for details) will also include training.

System manager training:

- -- must be performed off site
- -- to be performed at the University of Idaho since all recommended equipment is already available there as well as personnel to perform the training
- -- will last 3-4 weeks depending on the background of the person selected for the System Manager
- -- intensive training in English could precede technical training as needed with a corresponding increase in the length of the training

Estimated Costs:

Salary for instructor	$1500
Living expenses	350
Travel to Idaho	900
No Overhead	
(See UI/University of Ambato Cooperative Agreement)	
Total	$2750

English training at $450/month tuition and $650/month living expenses. This, if needed, would be in addition to the $2750 shown above.

Technical Assistance Requirements

Two kinds of assistance seem to be needed from outside technicians at this point:

1. design of the library database, its information request system and its feedback system

2. installation of equipment and training of the Faculty staff in the use of the software in cooperation with the System Manager

The former may very well be able to be accomplished by the PIP Information Center staff through the use of the mails and electronic mail. It would be up to the USAID/Quito staff in consultation with the UTA staff whether sufficient need existed to warrant a short (4-5 day maximum) on-site visit to work out some of these details.

The later need should ideally be met by the person responsible for training the System Manager at the time the equipment arrived in Ambato. Together they could actually assemble and debug the system. This will take optimistically 3 days and more likely 5 days. Another week should be spent by the consultant in working with the System Manager to do initial training on the various software and telecommunication functions.

Costs:

1. Information specialist (optional).
   Consultant per diem costs for 8 days at USAID rates
   Travel to Ambato.

2. Computer Installation and Training
   Consultant fee for 12 days at $150/day
   Consultant per diem costs for 16 days at USAID rates
   Travel to Ambato.

Project Timeline

```
Month 1        2        3        4        5        6        7        8
      A   C             D------▮       F J----▮
                                                                M---------▶
      B                      E        G----▮
                                      x--▮  x--▮
                                      H   K-----------------------------▶
                                        I
            L-------------------------------------------------------------▶
```

A -- Project approval from USAID, Ministry of Agriculture, etc.

B -- Equipment ordered

C -- System Manager chosen

D -- System manager off-site training

E -- Library database profiles drafted

F -- Equipment arrives

G -- Consultant to assist in installation & training

H -- Library database profiles finalized

I -- Electronic mail links to USAID and University of Idaho established

J -- Initial user training

K -- Library material input into database

L -- Document request and delivery system established (initially by mail)

M -- Computerized library materials acquisition system implemented.

x -- Possible time for information specialist to consult in Ambato if needed

A P P E N D I C E S

Appendix A:

Persons Consulted

USAID/Quito

Darell McIntyre, Deputy Agriculture Officer
Pat Beausolell, Librarian
Molly Ayarza, Assistant Librarian

Peace Corps/Quito

Jim T. Huddleston, Peace Corps Volunteer

Universidad Tecnica de Ambato

Dr. Saltos, President
Dr. Ventura, Deputy to the President
Education Librarian

Facultad de Ciencias e Ingenieria de Alimentos

Ing. Hector Anibal Saltos, Dean
Ing. Walter Penalosa, Researcher and Instructor
Ing. Luis Amoroso, Director, Instituto de Investigacion de Tecnologia de Industria (IITI)
Ing. Luis Cordova, Researcher
Ing. Gladys Navas, Researcher
Ing. Galo Sandoval, Researcher
Ing. Celio Barrigas, Researcher
Ing. Carlos Romero, Researcher
Senorita Carmen Naranja, Librarian

(In addition there was a staff meeting with 28 of the staff where the program being proposed was explained and questions about it and access to the Information Center at PIP was explained.)

Universidad de Loja

Dean of Agriculture

Escuela Politecnica Nacional

Dean of Chemical Engineering
Dr. Velasques, Director of Research in Engineering

Universidad Catolica

Dr. Llaguer, Head of the Department of Chemistry

Biblioteca Nacional de Ecuador

APPENDIX B

19

BIBLIOTECA

CIUDADELA INGAHURCO
Teléfonos 823011 - 820899
Ext. 22 Casilla 334
AMBATO - ECUADOR

Oficio Nº_____

Ambato, a_____ de_____ de 19____

TITULOS DE LAS REVISTAS EXISTENTES EN BIBLIOTECA - FACULTAD CIENCIA E INGENIERIA EN ALIMENTOS

45% in FSTA

- ALIMENTACION MODERNA
- ANALYTICAL CHEMISTRY
- ARCHIVOS LATINOAMERICANOS DE NUTRICION
- BIOCHEMISTRY
- CEREAL CHEMISTRY
- CHEMICAL ENGINEERING
- FOOD ENGINEERING
- FOOD PROCESSING INDUSTRY
- FOOD SCIENCE AND TECHNOLOGY ABSTRACTS
- FOOD TECHNOLOGY
- HELADERIA CONFITERIA LATINOAMERICANA
- INDUSTRIA GRAFICA LATINOAMERICANA
- INDUSTRIAS LACTEAS
- ION
- JOURNAL OF DAIRY SCIENCE
- JOURNAL OF FOOD SCIENCE
- MANAGEMENT SCIENCE
- NEWS
- OPERATIONS RESEARCH
- TECNOLOGIA DE ALIMENTOS
- VISION
- REVISTA LATINOAMERICANA DE TRANSFERENCIA DE CALOR Y MATERIA

APPENDIX C

NOMINA DE PROFESORES DE LA FACULTAD DE CIENCIA E INGENIERIA EN ALIMENTOS

Alvarado, Juan Ing.

Amoroso, Luis Ing. (IITI Director)

Anda, Luis, Ing.

Catillo, Marco Dr.

Del Pozo, Estuado Lcd.

Garces, Leonidas Arq.

Gallegos, Ramiro Dr.

German, Cesar Ing.

Grijalva, Gonzalo Dr.

Larrea, Oswaldo Ing.

Jadan, Angel Dr.

Manjarrez, Mario Ing.

Morales, Danilo Ing.

Naranjo, Fernando Ing.

Paredes, Mario Ing.

Parreno, Miguel Ing.

Penaloza, Walter Ing.

Poveda, Guillermo Ing.

Pullas, Jorge Ing.

Ramon, Luis Lcdo.

Rivera, Rommel Ing.

Sanchez, Eduardo Ing.

Soria, Carmen Lcda.

Uuloa, Angel Ing.

Vasconez. Cesar Ing.

Velastegui, Dario Ing.

AYUDANTES

Egda. Irma Villacis

Egda. Hilda Ortiz

Egdo. Jaime Arias

Egda. Sonnia Abril

Egdo. Marcelo Procel

Egda. Elsa Coka

Egda. Clara Villacres

Egda. Fanny Arguello

Egdo. Javier Salazar

Egda. Esthela Toaza

Egda. Mariela Freire

Ingenieros

Luis Cordova

Gladys Navas

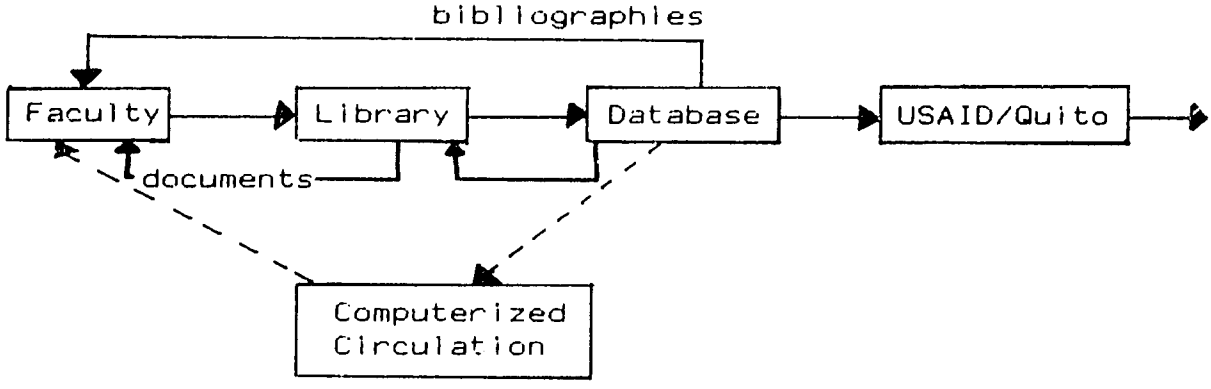
Galo Sandoval

Cello Barrigaji

Carlos Romero

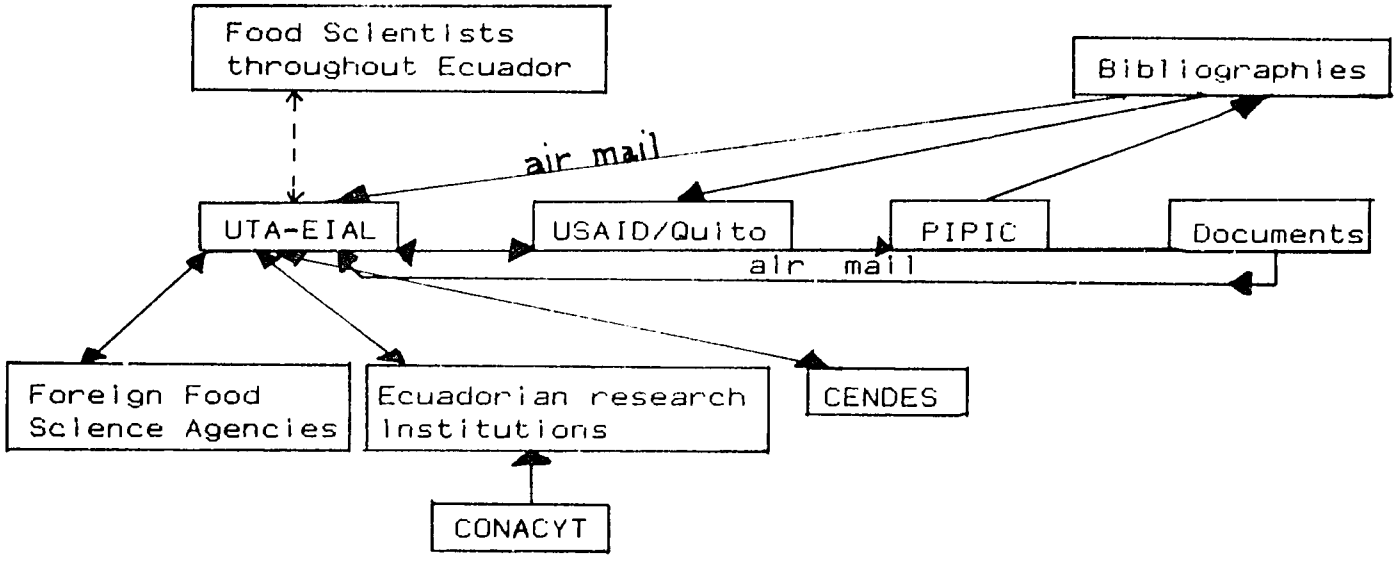
APPENDIX D

SCHEMATIC OF PROPOSED INTERNAL RELATIONSHIPS



---------- future activities, not to be implemented initially

SCHEMATIC OF PROPOSED RELATIONSHIPS AMONG INSTITUTIONS



All communications are at least potentially electronic unless shown otherwise.

APPENDIX E

Source for diskettes

Silicon Valley Liquidators
780 Trimble Road
Suite 608
San Jose, California 95131

Following are other descriptions of software and hardware recommended in the report.

PC

FOR IBM AND COMPATIBLE PERSONAL COMPUTERS

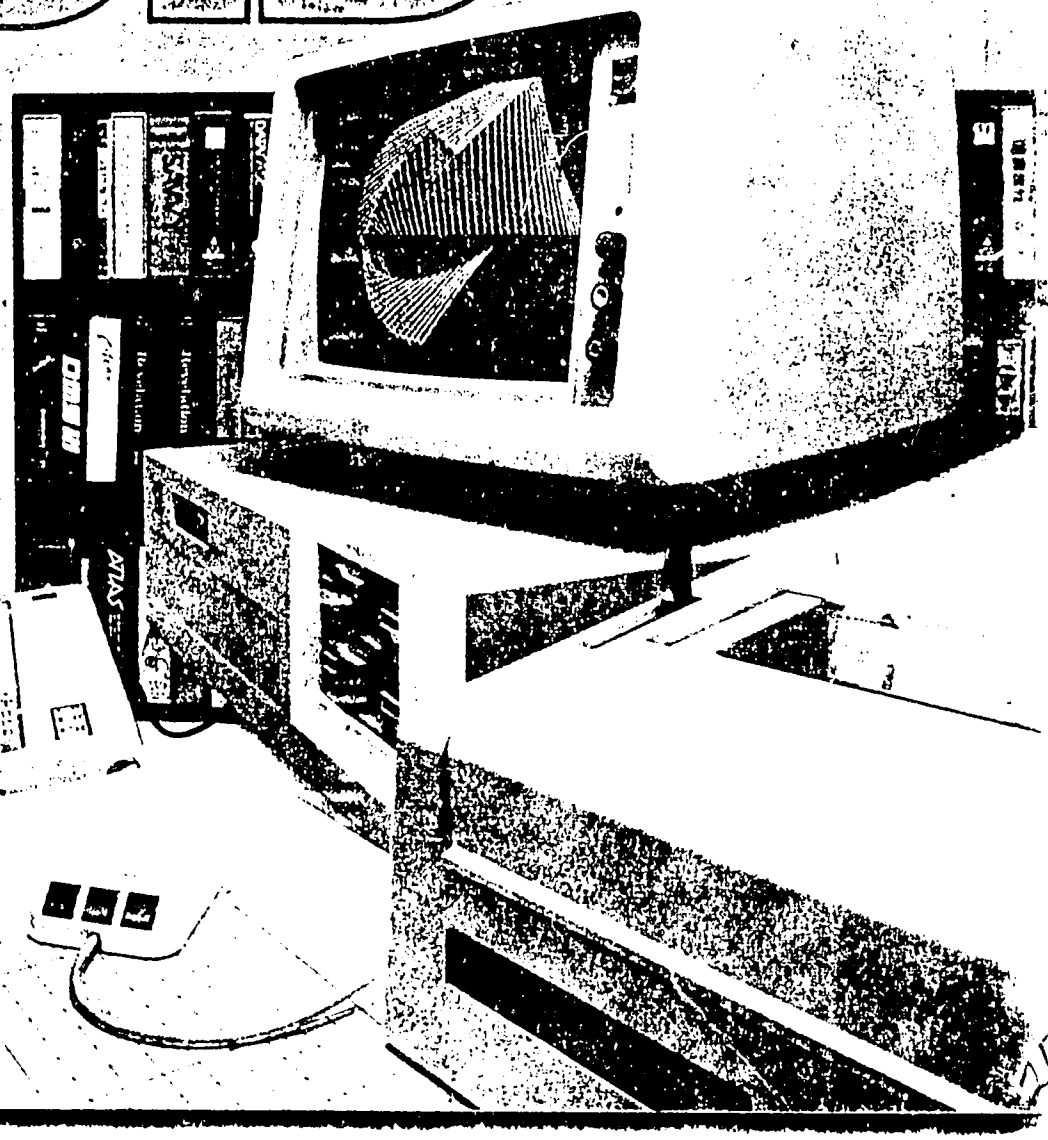
BUYERS GUIDE

SOFTWARE
HARDWARE
PERIPHERALS
SERVICES

PCjr and AT Included

198

$7



54
0 14024 14356

Applications Software for General and Business Use

er traditional word processing capabilities.

Minimum Configuration Requirements:
Memory Recommended 128K
No. of Diskette Drives Recommended: 2
Printer Call For Specifications
List Price: $195
Available From: Lifetree Software Inc

1807
WORDEASE **Intermediate**
Uses function keys & color; provides free cursor movement & prompting; formats a screen like the printed output & remembers paragraph margins. Features global search, replace & query/replace facilities. Deletes, moves or copies blocks of text. Controls printed output through margins, headers, footers, highlighting & pitch. Integrates with DATAEASE software; stands alone.

Minimum Configuration Requirements:
Memory Required 128K
No. of Diskette Drives Required: 2
List Price: $295
Available From: Software Solutions Inc

1808
WordStar **Intermediate**
This screen-oriented word & work processing system features integrated printing. It displays both initial entry of text & alteration of previously entered text. Most functions take place immediately, resulting in the display of a true print image; additional enhancements are performed during printout. Automatic margins, justification & paging allow high-speed entry of text. It can print one file while another is being edited. Call For Additional Requirements.

Minimum Configuration Requirements:
Memory Required 96K
Memory Recommended 128K
List Price: $495
Available From: —Microsto Int Corp
—Westico

1809
WordVision Writing Tool **Intermediate**
Features a set of color key labels or slip-on key cups. Provides special editing functions, including: swapping, capitalizing, bold facing & erasing characters, lines, words, sentences & paragraphs.

Minimum Configuration Requirements:
Memory Required 96K
Memory Recommended 128K
No. of Diskette Drives Recommended: 2
List Price: $79.95
Available From: Bruce & James

1810
The Word Worker **Intermediate**
This word processor features standard functions & permits user-modifications. It includes annotated source code.
List Price: $49.95
Available From: Design Enterprises Of SF

***1811**
WORD-X **Intermediate**
This word processor features a full screen editor & file merge capabilities.

Minimum Configuration Requirements:
Memory Required 128K
No. of Diskette Drives Recommended: 2
List Price: $198
Available From: Micro Architect Inc

***1812**
Zip WORD I **Intermediate**
First level of a 3-level word processor. Features: tab & margin set, set page, column & line display, line & character delete, jump to page/line, back-up file creation, save & return, full & partial print & on-line Help.

Minimum Configuration Requirements:
Memory Recommended 128K
List Price: $45
Available From: Automation Systems Inc

WORD PROCESSORS: FORM LETTERS

1813
FORMLET **Intermediate**
Prepares form letters from a selection of stored pre-written stock paragraphs. It stores up to 10 letters on disk and allows a user to select among them at will & to intermix fresh text with the stock paragraphs.

Minimum Configuration Requirements:
Printer Parallel
List Price: $47.95
Available From: Contract Services Asso

***1814**
Gold-Letters 101 Business Letters On Disk **Intermediate**
101 ready-to-use business letters. Prints a professionally written letter in seconds. Includes a word processor with WordStar line capabilities.

Minimum Configuration Requirements:
Disk Operating System DOS 2.x; CP/M-86
List Price: $159
Available From: Data-Base Industries

***1815**
Letterform 1000 **Intermediate**
This computer desk reference contains 1000+ letters & legal forms that can be called up to a screen, personalized, & printed using any word processor that reads standard ASCII files. Topics include: accounting & collection, employer/employee, general business, sales, schools & charities.

Minimum Configuration Requirements:
Memory Required 128K
Software (Additional) Word Processor
No. of Diskette Drives Recommended: 2
Hard Disk Recommended
List Price: $95
Available From: PBL Corporation

WORD PROCESSORS: MATHEMATICAL/SCIENTIFIC/ TECHNICAL

1816
Pelada Text Engineer **Intermediate**
This word processor for technical & multilingual text features special symbols, multiple character fonts, super-/sub-scripts, underlining & italics. Its alphanumeric mode accesses all characters in the IBM character set. Its graphics mode permits user-designed symbols or alphabets (e.g. Russian, Arabic) with realistic display & printing by an Epson FX-80.

Minimum Configuration Requirements:
Memory Required 256K
Memory Recommended 256K
No. of Diskette Drives Recommended: 2
Printer Epson FX-80, NEC Spinwriter
Adaptor Hercules Graphics

WORLD WRITER
Multilingual Word Processor
ENGLISH FRENCH SPANISH
GERMAN ITALIAN PORTUGUESE
SCANDINAVIAN GREEK AND MORE
RUSSIAN Русский Язык
ARABIC لغه عربيه
TRANSLATOR AID SYSTEM
Split Screen Dictionary Phrase Look-up
Operates simultaneously with World Writer. Add, edit, or look up phrases in dictionary—Select from alternative translations and automatically transfer selected phrase to World Writer for insertion into text.
TECHN∫ — WORD
Technical Word Processor
Fe · CuSO₄ · FeSO₄ · Cu
Economic Insights
414 Hungerford Drive, Suite 216, Rockville, MD 20850
(301) 258-5235 U.S.A.
CIRCLE 127 ON READER SERVICE CARD

List Price: $250
Available From: Pelada Informatica Inc

1817
Scientific/Foreign Symbol Editor Intermediate
This text editor for programs, letters & books features: scientific/foreign symbols printable & visible on a monitor; super/sub-scripts; & instant recovery of deleted material. It has specific requirements in terms of monitors, printers, print wheels, operating system patches & graphics cards. Call For Specifications.

Minimum Configuration Requirements:
Memory Required 256K
List Price: $250
Available From: Pelada Informatica Inc

1818
TECHNI-WORD Intermediate
This word processor allows the creation & editing of mathematical & technical text. It processes super-/sub-scripts (half/quarter-line) & multiple overstrikes. The screen displays underlined, bold & mixed color text. It features automatic text centering, proportionally spaced text & a lexicon of 25 phrases.

Minimum Configuration Requirements:
No. of Diskette Drives Recommended: 2
List Price: $595
Available From: Economic Insights

WORD PROCESSORS: MULTI-LINGUAL

1819
ARABIC-WP Intermediate
Word processor for English, Arabic & mixed English/Arabic documents. Features on-screen display of text exactly as it will appear in print. Permits: Arabic entry from right to left (with automatic selection of character shapes); English entry from left to right; proportionally spaced printed text; page headers & footers; user-defined lexicon of 25 phrases; & list processing for form letters.

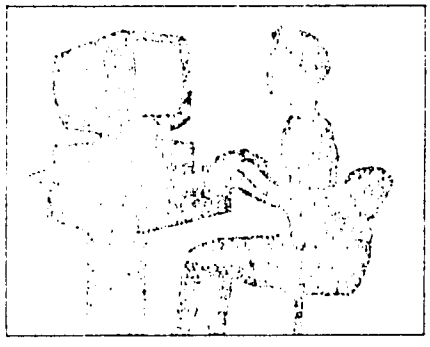
Minimum Configuration Requirements:
No. of Diskette Drives Recommended: 2
Display QuadScreen
Printer Call For Specifications
Hardware (Additional) Modified Character Chip Set
Adaptor QuadScreen
List Price: Available Upon Request
Available From: Economic Insights

1820
The Greek Transliterator Intermediate
Allows users to study original word usage in scripture without special training in Greek. Includes: The English text of KJV New Testament, Strong's Reference Numbers assigned to English text, a dictionary of Greek words, including: the English Definition, the Greek Transliteration & word origin & derivations.

Minimum Configuration Requirements:
No. of Diskette Drives Recommended: 2
List Price: $199.95
Available From: Bible Research Systems

1821
Multilingual-WP Intermediate
Word processor for French, Spanish, German & other languages. Features: easy keystroke entry & screen display of accented & special characters; selectable pitch & proportionally spaced type fonts; support for multiple languages in the same document; screen display of highlighting (underline, bold); & flexible list processing (mail lists). Other languages available on a custom basis. Upgrades to Translator Aid System.

Minimum Configuration Requirements:
No. of Diskette Drives Recommended: 2
Printer Call For Specifications
List Price: $595
Available From: Economic Insights



1822
Select Bilingual Intermediate
Operates in 2 languages — English or Spanish. Permits a user to learn, edit & create documents in either language. Includes: an on-screen tutorial, SuperSpell & mailing list Merge/Print functions. Features real-time justification, on-screen underline & boldface.

Minimum Configuration Requirements:
Memory Required 128K
No. of Diskette Drives Required: 2
List Price: $395
Available From: Select Information Sys

1823
Translator Aid System Intermediate
Word processing & computer assisted translation phrase look-up system. The word processor provides easy entry & on-screen display of characters for French, Spanish, German & other languages. The optional multi-lingual phrase retrieval system allows it to access stored phrases in a dictionary window simultaneously with text display. Stored phrases can be selected & moved to edited text. Users can create & modify phrase entries to develop customized dictionaries for particular subjects.

Minimum Configuration Requirements:
Memory Required 128K
No. of Diskette Drives Recommended: 2
Printer Call For Specifications
List Price: $595
Available From: Economic Insights

1824
Word Wand Intermediate
This multi-lingual word processor accommodates any of the Romance languages.

Minimum Configuration Requirements:
Memory Required 256K
No. of Diskette Drives Recommended: 2
List Price: $400
Available From: Tanda Software Inc

INDEXING/FOOTNOTING TOOLS

1825
Bibliography Intermediate
Compares citations in a manuscript with entries in a reference file, constructs a bibliography of all entries cited, & moves entries into footnotes in a manuscript. The entries may be of any length or format. It works with most word processors & handles references to meet the requirements of most professional formats.

Minimum Configuration Requirements:
Memory Required 128K
Disk Operating System DOS 1.1; DOS 2.x; CP/M-86
Software (Additional) Word Processor
No. of Diskette Drives Recommended: 2
List Price: $125
Available From: Digital Marketing Corp

•1826
DOCU-POWER Intermediate
This boilerplate word processing enhancer allows a user to create a numbered index of previously edited texts, ASCII files, or spreadsheets. It enables a user to pick from that index any paragraphs, phrases, pages & articles to create new arrangements without having to re-word process a single sentence.

Minimum Configuration Requirements:
Disk Operating System DOS 1.1; DOS 2.x; CP/M-86
Software (Additional) Word Processor
No. of Diskette Drives Required: 2
List Price: $149
Available From: COMPUTING!

1827
Footnote Intermediate
Automatically numbers & formats footnotes & text in WordStar & Select files. Footnotes may be entered anywhere in the text, singly or in groups, & placed at the bottom of the correct page & in a separate note file. After running, a user may re-edit the text, add or delete notes, & run again to renumber & reformat. Includes a program for checking that underline & boldface commands to the printer are terminated.

Minimum Configuration Requirements:
Memory Required 128K
Disk Operating System DOS 1.1; DOS 2.x; CP/M-86
Software (Additional) WordStar or Select
No. of Diskette Drives Recommended: 2
List Price: $125
Available From: Digital Marketing Corp

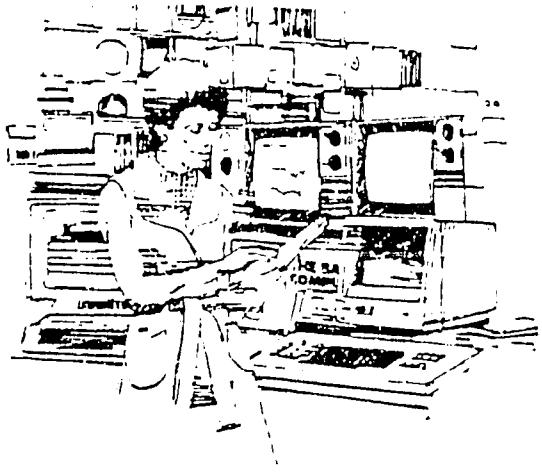
1828
INDIX Intermediate
Generates an index from a formatted text file. Extracts words, phrases & concepts & their related page numbers to create a 2-column alphabetical index.

Minimum Configuration Requirements:
Memory Recommended 128K
List Price: $95
Available From: Emerging Technology

•1829
KWICINDX Intermediate
Reads ASCII format files & produces a sorted keyword in context index. Includes a stopword file which may be used to prevent selected words from appearing. Provides a sample stopword file containing many words usually removed from a KWIC index.

Minimum Configuration Requirements:
Printer Dot Matrix
List Price: $30
Available From: Miracle Computing

1830
MagicIndex Intermediate
Compiles indexes & tables of contents. Features: index entries marked in text without a user having to retype entries;



SCOOTER

RS232 KIT

Instruction Sheet

This kit's design enables you to produce a professional quality interface cable. Everything needed to produce a finished custom cable is furnished in the SCOOTER Kit. Before starting, completely read the following instructions to insure proper assembly.

The kit contains the following:

1 ea.	24 awg., 9 conductor, foil shielded cable with pre-crimped pins and pre-attached jumper assembly.
2 ea.	25 position RS232 connector blocks
2 ea.	Gray hoods with strain relief
2 ea.	Jumper wires
1 ea.	Insertion, extraction tool
Plus	Mounting hardware

Step One: Determine the proper pin positions to be used. Check the owner's manual for this information. If not available,, inspect the mating connector (external and internal) on the component. Make a note of the positions to be used.

Step Two: Insertion of pins; use enclosed tool to insert pins into pre-determined positions. Red end for insertion, white end for extraction. Please note conductor with wire nut and three lead wires. This is used when one or more pins must be jumpered.

Step Three: Hood assembly; insert assembled block into one half of the hood. Make sure unused wires are fitted into the hood. Attach top half and fasten with hardware provided. Tighten strain relief to complete hood assembly.

Example: Hayes Modem Cable; connect pins 1 thru 8 and 20 on Connector A to pins 1 thru 8 and 20 on Connector B.

Any problems or questions, call or write:

OHM/ELECTRONICS, INC.
746 Vermont Avenue
P. O. Box 368
Palatine, Illinois
1-800-323-2727

30

PC WORLD

The Comprehensive Guide to
IBM Personal Computers and Compatibles

ual
ftware
Review

A Comprehensive Software
Word Processing
Spreadsheet
Graph
Integrated
Accounting
Management
Personal Management and
Entertainment

Includes Software
by PC World Editors

dEng

Trigonometric and logarithmic functions as well as miscellaneous routines are included in *dEng*. Arguments are passed from a program to the function program and returned with mnemonic memory variables. Typical accuracy is 6 to 8 significant digits. All functions are provided in *dBASE II* source code. List price: $79.95. Requirements: 128K, one disk drive, *dBASE II*.
Feller Assoc.
550 CR PPA, Rt. 3
Ishpeming, MI 49849
906/486-6024

ABstat

An interactive statistical package, *ABstat* is designed for data analysis. You can define equations in simple algebra and obtain the mean, standard deviation, and case number of each variable. Statistical procedures include descriptive statistics, analysis of variance, chi-square analysis, correlations, cross-tabulations, multiple regressions, and t-tests. *ABstat* can accept data directly from *dBASE II* files or ASCII files created by other programs. List price: $395. Requirements: 128K, two disk drives.
Anderson Bell
P.O. Box 191
Canon City, CO 81212
303/275-1661

Statistician's MACE

A statistics program for scientists, business and financial analysts, statisticians, and engineers, *Statistician's MACE* calculates descriptive statistics, multiple regression analysis, and pairwise correlations. ANOVAs are calculated for completely randomized, completely randomized factorial, and randomized block. The program performs t-tests, nonparametric tests, and data transformations. List price: $195. Requirements: 128K, one disk drive.
The Matrix Calculating Engine (MACE), Inc.
2313 Center Ave.
Madison, WI 53704
608/241-4566

SigStat

A statistical analysis package, *SigStat* includes 36 programs for univariate and multivariate analysis of variance and covariance, general linear models, regression and factor analysis, canonical correlations, discriminant analysis, life table and survival rate, time series, probit, multidimensional scaling, cross-tabulations, scatter plots, and data transformations. A version is available that uses the 8087 coprocessor to handle up to 80 variables on 32,767 cases. List price: $595 ($395 for schools and nonprofit organizations). Requirements: 128K, one disk drive.
Significant Statistics
3336 N. Canyon Rd.
Provo, UT 84604
801/377-4860

Number Cruncher Statistical System

An integrated statistical system, *Number Cruncher Statistical System* covers means, variances, frequency tables, histograms, scatter plots, correlations, multiple regression, residual analysis, stepwise regression, robust regression, principal components analysis, survival analysis, life table analysis, t-tests, ANOVA, repeated measure ANOVA, analysis of covariance, discriminant analysis, forecasting, and transformations. The program reads ASCII files. List price: $200. Requirements: 128K, two disk drives.
NCSS/Dr. Jerry L. Hintze
865 E. 400 N
Kaysville, UT 84037
801/546-0445

Miscellaneous

CUPlan

A reporting and forecasting system for credit unions, *CUPlan* can store five years of monthly financial and statistical data. The menu-driven program allows numeric and graphics data lookup and prepares nine formatted financial reports. You can build financial models and prepare multiyear forecasts for up to six years. Forecasts are prepared as pro forma, in-balance financial statements including interest, dividend, and reserve calculations. List price: $1200. Requirements: 128K, two disk drives.
Robert Eldridge & Assoc.
3184 Kingsley Pl.
Lafayette, CA 94549
415/284-2937

DARTS III

Designed to help manage radio stations, *DARTS III (Datacount Accounts Receivable & Traffic Scheduling)* covers contract entry, logging, accounts receivable, and management reporting. The system produces logs, projections, affidavits, and co-op statements and reports on sales management, aged trial balance, sales rep collection and performance, and average spot rates. The billing function offers calendar month, broadcast month, and demand cycles. List price: $5200. Requirements: 256K, 10MB hard disk.
Datacount, Inc.
2207 Anderson Rd.
Opelika, AL 36801
205/749-5641

Instat

Performing general-purpose data analysis and screening, *Instat* displays means, standard deviations, histograms, contingency tables, simple regression, t-tests, and chi-square tests. *Instat* supports six variable types, variable names, and missing values. Analyses can be specified interactively or in batch runs. A Describe command directs the program to choose the most appropriate display. List price: $95. Requirements: 128K, one disk drive.
Statistical Consulting Services
517 E. Lodge Dr.
Tempe, AZ 85283
602/838-7784

The Survey System

Designed to enter, edit, process, and present questionnaire data, *The Survey System* can produce crosstabs and scored variable tables. Tables can have multiple-column variables and be up to three pages long. *The Survey System* includes BASIC statistics routines. You can weigh questionnaires, select subsamples, and create new variables from the values of existing variables. An open-ended question coding and analysis program, which expands the number of codes for answers and allows additional categories and subcategories, is optional. A card reader program, a card reader device, and a connecting cable are also optional. List price: *The Survey System* $495, coding and analysis program $200, card reader program $100, card reader device $14.95, connecting cable $25. Requirements: 128K, one disk drive.
Creative Research Systems
1864 Larkin St.
San Francisco, CA 94109
415/771-0912

Survtab

To aid in market research and processing survey data, *Survtab* accepts and tabulates data from questionnaires. It does cross-tabulations and banner tables of up to 80 questions per questionnaire and can handle as many questionnaires as the disk allows. The program can also tabulate multiple-response questions. List price: $180. Requirements: 64K, two disk drives.
Statistical Computing Consultants
10037 Chestnut Wood Ln.
Burke, VA 22015
703/250-9513

TexSolver-10

The numerical problem-solving abilities of *TexSolver-10* allow calculations without complicated programming procedures. The program's range of mathematical functions includes trigonometry, statistics, and logarithms. *TexSolver-10* uses a "stack" operating logic, similar to that of Hewlett-Packard calculators, which offers temporary storage of intermediate results to minimize keystrokes. The available functions and stack contents are always displayed on screen. List price: $39.95. Requirements: 64K, one disk drive.
Microtex
P.O. Box 111054
Carrollton, TX 75011
214/980-9837

SPSS/PC

A program with room for 200 to 250 variables, *SPSS/PC* performs statistical analyses and formats reports. Functions include ANOVA, cross-tabulations, correlations and partials, multiple regression with up to ten lag variables, non-parametric tests, t-tests, hierarchical log and linear analysis, and frequency tables. List price: $795. Requirements: 320K, 10MB hard disk.
SPSS Inc.
444 N. Michigan Ave.
Chicago, IL 60611
312/329-2400

Mathematics Series

Four menu-driven mathematical analysis programs make up the *Mathematics Series*. The statistical package computes means, standard deviations, frequency distributions, simple linear regression (SLR) lines, SLR equation coefficients, and data points. For any two- or three-variable equation that uses basic arithmetic functions, the program plots the equation, its integral, its derivative, roots, maxima or minima, and the integral value over the plot range. A matrix program lets you solve for the inverse, determinant, and solution matrix for linear systems of up to 54 equations in 54 unknowns. List price: $50. Requirements: 64K, one disk drive.
Spectrum Software
1021 S. Wolfe Rd. #130
Sunnyvale, CA 94086
408/738-4387

StatPac

A menu-driven statistical package for professional researchers, *StatPac* includes a data manager and a word processor for editing files. Features include batch processing, frequencies, descriptive statistics, breakdown, cross tabs, correlation and regression, multiple regression, t-tests, one- and two-way ANOVA, and multiple-variable response. Data manipulation includes writing, listing, weighting, sorting, and aggregating cases. Data files can contain 5000 records and 255 columns of alphanumeric information. *StatPac* is menu-driven and reads fixed- or free-format ASCII files. List price: $400. Requirements: 128K, two disk drives.
Walonick Assoc.
5624 Girard Ave. S
Minneapolis, MN 55419
800/328-4907, 612/866-9022

Science and Mathematics

Forecast Plus

A forecasting package for any number of specific business applications, *Forecast Plus* includes data management and exploratory features. Functions include algebraic transformations, lags, and differencing. Exploratory graphics features include time plots, 4253HT smoothing, box plots, aggregate box plots, spread-versus-level plots, and auto-correlation functions. Forecasting procedures include simple moving averages, single and double exponential smoothing, Holt's two-parameter smoothing, Harrison's harmonic smoothing, Brown's quadratic exponential smoothing, Winter's multiplicative seasonal smoothing, robust decomposition, Census X-11 decomposition, regression trend analysis, multiple regression analysis, generalized adaptive filtering, and Box-Jenkins analysis. All procedures include time plots, forecasts, one-step-ahead forecasts, and forecast tables. List price: $595. Requirements: 128K, two disk drives.
Walonick Assoc.
5624 Girard Ave. S
Minneapolis, MN 55419
800/328-4907, 612/866-9022

TK!Solver

An equation-processing program, *TK!Solver* is designed for engineering, finance, science, and education professionals who use mathematical models. Without programming, you can solve a single equation or sets of simultaneous equations. *TK!Solver* lets you solve for any variable without rewriting equations. It solves for unknowns on either side of the equal sign, converts units, and solves for lists of values. The program displays output in tables and plots. List price: $399. Requirements: 128K, one disk drive.
Software Arts, Inc.
27 Mica Ln.
Wellesley, MA 02181
617/237-4000

Statplan II

A statistical analysis package, *Statplan II* contains a full-screen editor for data entry and editing. Procedures include basic statistics, correlation matrix, ANOVA, multiple regression, curve fitting, auto-correlation, seasonality adjustment, and cross tabs. Graphics include cross plots, histograms, time series plots, and regression and curve fit plots of actual and calculated data points. *Statplan II* can read and write DIF and ASCII files for data exchange with *1-2-3*, *VisiCalc*, and *dBASE II*. *Statplan II* is written in BASIC, and source code is provided. List price: $99. Requirements: 64K, one disk drive.
The Futures Group
76 Eastern Blvd.
Glastonbury, CT 06033
203/633-3501

Microstat

A file-oriented statistics package, *Microstat* calculates descriptive statistics, ANOVA, cross tabulations, chi-squares, correlations, stepwise multiple regressions, scatter plots, nonparametrics, time series, and probability distributions. List price: $375. Requirements: 128K, one disk drive.
Ecosoft, Inc.
6413 N. College Ave.
Indianapolis, IN 46220
317/225-6476

LP88, DLP88, BLP88, MILP88, TSA88

A menu-driven system for solving linear problems with up to 255 constraints and 2255 bounded and unbounded variables, Eastern's series sets up and solves problems, controls computations, and generates tables. Features of each program include spreadsheet-style input and editing, input from sequential files, a storage system for problems and bases, sensitivity analysis output to sequential files, and optional 8087 support.

LP88 applications include production, scheduling, inventory, mixing, transportation, and networks. *DLP88* is a linear programming system that converts a primal problem into its dual form and vice versa.

BLP88 is designed for problems in which variables are restricted in value by upper or lower bounds; the program uses transformations and upper bound substitutions without adding the bounds to the constraint set.

MILP88 solves linear problems with 45 integer-valued variables and 1255 noninteger variables, using an application of the "branch and bound" method.

TSA88 solves transportation problems with up to 256 sources (origins) and 256 sinks (destinations). Applications include assignment and transshipment models as well as the classical linear programming transportation problem. List price: each program $88. Requirements: *LP88* 128K, one disk drive; *DLP88* 192K, one disk drive; *BLP88* 192K, one disk drive; *MILP88* 192K, one disk drive; *TSA88* 128K, one disk drive.
Eastern Software Products
4804 Tarpon Ln.
P.O. Box 15328
Alexandria, VA 22309
703/360-6942

"LP88 *has become a bit with our firm. Its two outstanding features are its ability to read data from 1-2-3 print files and its use of a spreadsheet-like editor to make changes in the initial basis. In all respects the program appears to work exceptionally well. I only wish that it could handle bigger problems.*" George Boomer, Los Angeles, California

proce ses checks and records for staff and salaried drivers as well as owner/operator/driver settlements. *Comsen's Trucking System LTL* includes the same features and capabilities for less-than-load truckers. List price: each program $14,000. Requirements: 128K, 10MB hard disk.
Comsen, Inc.
20-A Erford Rd. #103
Lemoyne, PA 17043
717/737-6971

Systems Aided Manufacturing Management

An MRP (material requirements planning) system for manufacturers, *Systems Aided Manufacturing Management* includes modules for inventory control, master scheduling, MRP, shop floor control, purchase order control, capacity planning and control, bill of material, and product costing. List price: $6000. Requirements: 128K, 10MB hard disk.
Eastman Micro Systems, Inc.
620 W. 1950 N
West Bountiful, UT 84087
801/292-0664

TMM Maintenance Inventory Control Systems

Designed for industry maintenance departments, *TMM Maintenance Inventory Control Systems* tracks spare parts. The program uses daily work order and receipt-from-vendor entries to automatically update the inventory and value-of-inventory data base and to compute interdepartmental charge-backs for parts. It produces a variety of reports including inventory, daily and monthly activity, reordering, and a parts catalog. *TMM Maintenance Inventory Control Systems* can integrate with optional *TMM Corrective Work Order* and *TMM Preventive Maintenance Work Order* modules, which also stand alone. List price: $1500, each optional module $1500. Requirements: 256K, hard disk.
TMM Systems
Division of Weiss Assoc., Inc.
127 Michael Dr.
Red Bank, NJ 07701
201/530-9260

mrp2

A system of modules for material requirements planning, *mrp2* helps manufacturers track materials and work orders, schedule production, and perform job costing. The *Material Planning* package generates and reschedules orders based on available inventory, purchase orders, work orders, and other planning requirements. Single-level pegging traces the material requirement to the item that generated it. The package tracks daily net changes with the option for complete regeneration. It incorporates a three-year, 1000-day dynamic shop calendar.

The *Shop Floor Control and Capacity Planning* package provides labor information for each work center, lists the operations, materials, and labor necessary to produce an item, and plans up to 1000 workdays. The package also produces work orders, allocation reports by item number, on-order tallies, exception reports, and dispatch reports by work center. It summarizes and reports the planned, firmed, and released work by work center.

mrp2's Job Costing package projects material, labor, burden, and outside operation costs for an item, using standard and current cost groups and elementary and total cost types. It provides standard job cost and variance reports for the inventory, purchasing, and shop floor functions and outputs general ledger data for use by an accounting system.

For planners, the *Master Scheduling* module simulates any key component of a company's operation and creates a production schedule that can be input to the *Material Planning* package. It calculates bills of material, option ratios, service part propagation reports, and available-to-promise estimates. List price: *Material Planning* $7070, *Shop Floor Control and Capacity Planning* $2880, *Job Costing* $1785, *Master Scheduling* $1310. Requirements: 256K, two disk drives.
Twin Oaks, Inc.
P.O. Box 136
Cottage Grove, MN 55016
612/458-1604

Churchmouse

A real-time manufacturing control package, *Churchmouse* lets small to medium-size manufacturers track inventories, production, and costs. The system provides bills of material and reports on inventory, purchasing, material and capacity planning, and costing. All functions offer on-line help. *Churchmouse*'s data base is compatible with Twin Oaks' *mrp2*. List price: $1395. Requirements: 256K, two disk drives.
Twin Oaks, Inc.
P.O. Box 136
Cottage Grove, MN 55016
612/458-1604

The Least Cost Formulator

A system that performs single- and multi-product analysis, *The Least Cost Formulator* determines the least-cost combination of materials to meet product requirements. A raw material table accommodates any number of raw materials and preblends, each having any number of attributes. Product formulations can contain any number of raw materials and constraints. Data files and results can be exported to *1-2-3*. List price: one-time license fee for single product $6000, for multiproduct $12,000.
Least Cost Formulations, Ltd.
1685 Chevron Way
Atlanta, GA 30338
404/394-8127

LABsolv

A statistical data base manager, *LABsolv* stores quality assurance test data for analysis and comparison to specifications. A query language lets you select, sort, and report information. *LABsolv* complements virtually any environment needing quality control. You can create detailed specifications by type, such as chemical, microbiological, physical, granulation, sanitary, and sensory. List price: $5495. Requirements: 256K, 10MB hard disk, DOS 2.00 or later version.
Applied Micro Solutions
McGrow, Pridgeon & Co., P.A.
Investment Bldg.
Baltimore, MD 21204
301/821-8300

Piping/DMV Estimating, Sheet Metal Estimating

Designed for contractors, *Piping/DMV Estimating* and *Sheet Metal Estimating* use simple data to price piping and duct systems for construction. The programs have single-key parts descriptions that let you enter data without keying in parts numbers or selecting from a series of menus. A master parts file is preloaded with 5700 items and has a capacity of approximately 11,000 items. List price: each program $4900, both $7400. Requirements: 128K, two disk drives.
Escomate
309 Commerce Dr. #5
Fort Collins, CO 80524
303/484-8200

P.O. Box 483
Merrifield, VA 22116
703/573-3885

Psychometric Chart

For designing heating and air conditioning systems, *Psychometric Chart* uses the ASHRAE equations to solve for eight moist air properties: dry bulb temperature, wet bulb temperature, relative humidity, humidity ratio, vapor pressure, dew point, enthalpy, and specific volume. Barometric pressure and any two known properties can be entered in either English or International System Units. The program determines the heating and cooling loads for two entered points. It also calculates adiabatic mixing, which can be included in load calculations. List price: $49.94. Requirements: 64K, one disk drive.
B & E Software Consultants, Inc.
2172 Donner St. NW
North Canton, OH 44720
216-497-1221

QualityAlert

Automating statistical quality control, *QualityAlert* lets users analyze process capability, construct eight types of control charts, generate sample data, and determine when quality deviations occur. The program is designed for both attribute and variable data. The system displays numerical data, statistics, and graphics or prints hard copy on a graphics printer. List price: $795. Requirements: 64K, one disk drive, graphics board.
Penton Software, Inc.
420 Lexington Ave. #2846
New York, NY 10017
800/221-3414, 212/878-9600

Micro-CAP, Micro-Logic

Designed for electronics engineers and students of electrical engineering, *Micro-CAP (Circuit Analysis Program)* and *Micro-Logic* are electronics labs implemented in software, complete with facilities for constructing any electronic or logic circuit, respectively, and the instruments for analyzing it. The programs are versions of mainframe simulators. Engineers create circuits using keyboard-driven graphics functions. The systems allow engineers to perform "what if" analyses to see how their circuits will function. With *Micro-CAP*, AC, DC, and transient analyses of electronic circuits can be performed. The transient analysis graph is similar to an oscilloscope, the AC analysis resembles a spectrum analyzer, and the DC analysis looks like a curve tracer display. With *Micro-Logic* engineers can perform timing simulations and review waveforms and I/O patterns for digital circuitry. List price: *Micro-CAP* $475, *Micro-Logic* $450. Requirements: 192K, two disk drives, color graphics board.
Spectrum Software
1021 S. Wolfe Rd. #130
Sunnyvale, CA 94086
408/738-4387

CAPPS

An automated numerical control (N/C) programming system, *CAPPS (Computer Aided Part Programming System)* eliminates the need to use a high-level language and manual programming to create N/C programs. The menu-driven program creates complex machining routines by asking basic machine-shop questions as well as specific questions about tooling and fixturing. Part Families contain logic pertaining to various types of workpieces. *CAPPS* can be used with machine tools either indirectly through a punched-tape system or directly by downloading to the tool itself. List price: with ten Part Families of average complexity $7000, downloading facility $1500. Requirements: 128K, 10MB hard disk.
National N/C Applications, Inc.
6789 Main St.
Williamsville, NY 14221
716/631-3993

Engineering and Scientific Utilities

The two programs in *Engineering and Scientific Utilities* are UNITSCON and PROPUTIL. UNITSCON controls the choice of over 18,000 combinations of input and output dimensional units for other application programs. Written in a color graphics format with on-line help and error recoveries, it configures other programs to a consistent set of I/O units. Double-precision data and protocol selections on disk can be referenced by other programs. PROPUTIL is an interactive data base manager with data entry, searches, file building, and block copying capabilities. It manages consistent data files of materials or fluids for reference by other programs. List price: $250. Requirements: 128K, one disk drive.
IMPULSE Engineering
P.O. Box 3540
San Francisco, CA 94119-3540
415/788-4611

TK!SolverPack for Building Design and Construction

Designed to be used in conjunction with the *TK!Solver* program, the *TK!SolverPack for Building Design and Construction* is for architects, building designers, and construction engineers. It contains 15 models with equations, values, and tables for solving common problems in planning and estimating residential construction, such as simple column design, concrete and roofing estimation, solar heat gain, rafter and stair design, and exterior wall cost estimation. Many of the models can be modified for commercial applications. List price: $100. Requirements: 128K, one disk drive, *TK!Solver*.
Software Arts, Inc.
27 Mica Ln.
Wellesley, MA 02181
617/237-4000

CADDraft

You can create, edit, and plot two-dimensional designs with *CADDraft*. The menu-driven CAD program has a grid system that lets you select designs for display with a cursor control device such as a mouse or a digitizer. Designs consist of lines, arcs, circles, rectangles, symbols, and text. *CADDraft* allows dragging of symbols and elements and rubber-banding of line and output scaling. You can place components on up to ten layers. Once a symbol has been created, it can be stored in a library for subsequent designs.

CADDraft provides three line types, three colors, and a 5000-point data base. It has Zoom, Pan, Move, Copy, Edit, and Delete commands; definable Rotate commands; and variable-size plot windows. It supports the Epson FX-80 and MX-80 (with Grafitrax) and IBM dot matrix printers and the Houston Instrument DMP-40 (A-size) plotter. List price: $495. Requirements: 320K, two disk drives (hard disk recommended), IBM Color Graphics Adapter, serial port, mouse or digitizer.
Personal CAD Systems, Inc.
981 University Ave.
Los Gatos, CA 95030
408/354-7193

F-Chart 123

Solar heating designers and engineers can calculate solar heating system performance using *F-Chart 123*. Used with *1-2-3*, the program analyzes air or water solar heating systems. Program output includes the annual percentage of heating load supplied by the solar heating system. List price: $60. Requirements: 256K, two disk drives, *1-2-3*.
E. Jessup & Assoc., Mechanical Engineers
4977 Canoga Ave.
Woodland Hills, CA 91364
818/348-2068

Sound 123

A *1-2-3* template, *Sound 123* calculates the attenuation between a fan and a room required to achieve sound control. Attenuation is displayed for the center frequency of each octave band. Designers can enter specific sound levels of the proposed fan or let the program supply the approximate levels. The program also calculates duct attenuation, bend attenuation, branching losses, end reflection effect, room absorption effect, and resultant sound pressure level in the room for each octave band center frequency. List price: $40. Requirements: 256K, two disk drives, *1-2-3*.
E. Jessup & Assoc., Mechanical Engineers
4977 Canoga Ave.
Woodland Hills, CA 91364
818/348-2068

CADPlan

Designed for architects, engineers, and builders, *CADPlan* facilitates the creation of two-dimensional designs. A data base management system maintains statistics on design components. After selecting a grid in either English or metric units, you can create designs with lines, arcs, circles, rectangles, text, and three colors. You can copy, move, rotate, delete, and undo, pan around the design, or zoom in and out. Images can be stored as symbols in *CADPlan*'s library for use in subsequent designs. The program supports a pen and a tablet, a mouse, or a digitizer. Optional modules add data base extraction capabilities and automatic dimensioning. List price: $1300, *Data Base Extraction* $350, *Automatic Dimensioning* $250. Requirements: 320K, one disk drive, color graphics board, serial port, choice of pen and tablet, mouse, or digitizer.
Personal CAD Systems, Inc.
981 University Ave.
Los Gatos, CA 95030
408/354-7193

Pipeline Friction Loss Calculator

Engineers and piping designers can calculate friction losses and other system properties with *Pipeline Friction Loss Calculator*. From the nominal diameter, length, schedule, temperature, and flow rate, the program indicates fitting losses within the total pipe loss. *Pipeline Friction Loss Calculator* computes only for water or fluids with the same properties as water. The program works with actual water temperatures. List price: $49.95. Requirements: 64K, one disk drive.
B & F Software Consultants, Inc.
2172 Donner St. NW
North Canton, OH 44720
216 497-1221

Matrimatics

You can do general engineering and scientific calculations with *Matrimatics*, a package of four programs that solve simultaneous linear equations and perform symmetric, tridiagonal, and full matrix inversions. Program data is entered at the keyboard or transferred from previously created data files. The programs can be used as subroutines or used with applications. Complete listings and a detailed manual are included. List price: $99. Requirements: 64K, one disk drive.
Micro Vision
145 Wicks Rd.
Commack, NY 11725
516 499-4010

Construction Estimating–Data Base/Assembly

You can record and store a catalog of up to 16,000 construction items with *Construction Estimating–Data Base/Assembly.* The estimator performs a takeoff and enters the quantities into the system. Using formulas and previously defined "assemblies" (groups of items put together in a similar manner throughout a building), the estimating program calculates quantities and costs of all required items. The estimator can enter the required number of linear feet of wall and automatically compute quantities and costs of dry wall, studs, tape, and other items. Within the data base each item can be classified as labor, material, subcontractor, equipment, or miscellaneous and coded by a definable structure of 16 major divisions and 160 subdivisions. For global labor pricing the system permits crew costs to be maintained in a table that can easily be revised. List price: $2990. Requirements: 64K, one disk drive.
Construction Data Control, Inc.
6410 Northbelt Pkwy., Ste. A
Norcross, GA 30071
404/448-4722

TModel–Transportation Modeling System

Transportation engineers or planners can project long-range roadway needs with *TModel–Transportation Modeling System.* The program uses land-use planning to analyze the hourly traffic volumes of either an existing or a planned roadway network. *TModel* uses dynamic node modeling, including one- to three-way stop signs and traffic signals. It can model up to 80 zones, 350 nodes, 1200 links, and 28 turn-movement locations. *TModel* has no link category restrictions or artificial link weighting, and the program's distribution and assignment operations are performed in RAM. List price: $1200. Requirements: 128K, one disk drive.
Professional Solutions, Inc.
3765 N.W. 173rd Pl.
Beaverton, OR 97006
503/645-4422

Bid Writer

Equipment dealers, contractors, and engineers can use *Bid Writer* to prepare customer proposals for inventory parts and labor. Bids can include heading information, subtotals, totals, and items from an established library of frequently needed products. The program also produces a list of library records and proposals on file. List price: $240. Requirements: 128K, two disk drives.
Key Systems, Inc.
512 Executive Park
Louisville, KY 40207
502/897-3332

Images-2D 2.0

An engineering analysis program, *Images-2D* performs two-dimensional static and dynamic analyses for beams, trusses, triangular plates, and springs. The menu-driven program prompts you for structural geometry, joint and member properties, material properties, and load configuration. The program analyzes results of loads, deflections, and beam stresses. When doing dynamic analysis, *Images-2D* solves for frequencies and mode shapes, which can be plotted and animated in full color. By entering responses to an earthquake, you can also do seismic analysis. List price: $1699. Requirements: 192K, 8087 math coprocessor, two disk drives, color graphics board.
Celestial Software Inc.
125 University Ave.
Berkeley, CA 94710
415/841-7175

Program SST

A data base of AISC steel section tables, *Program SST* lets you view properties of a single section or group of sections to satisfy your design criteria. You can add and delete data base sections. Program source code is provided, which you can customize to meet specific needs. List price: $150. Requirements: 64K, one disk drive.
TechArt Associates
P.O. Box 370
Berkeley, CA 94701
415/525-0870

Plan/Trax

Designed as a planning and monitoring tool for engineering, architectural, and construction projects, *Plan/Trax* is a critical path scheduling, costing and resource planning system. The menu-driven program produces the project planning and status reports of PERT (Project Evaluation and Review Techniques) systems. *Plan/Trax* sets up a budget after you divide each project into tasks, allocate fixed costs and labor requirements, and assign beginning and ending dates. When you provide periodic updates, the program automatically compares actual expenses with projected expenses to help monitor profits and costs. List price: $595. Requirements: 256K, one disk drive.
Omicron Software
57 Executive Park S. #590
Atlanta, GA 30329
404/325-0124

Engineering Software for Micros

Combining graphics with engineering problem solving, *Engineering Software for Micros* is a package of 25 programs that show how to write computer-aided design (CAD) software and how to use a microcomputer for professional engineering work. You can create engineering drawings; store, recall, update, and merge them; and produce three-dimensional isometric views. Physical properties such as weight, electrical resistance, and thermal capacity may be added to the components in the drawing. Stored drawings can be recalled by application programs that perform mechanical analysis, heat transfer analysis, circuit analysis, and matrix operations. Also included are programs that perform Fourier series and transform analyses. List price: $50. Requirements: 64K, one disk drive, color graphics board.
Kern Publications
P.O. Box 1029
Duxbury, MA 02331
617/934-0445

Select: The Word Processor, Select Write

A menu-driven word processor, *Select: The Word Processor* features single-key commands, a built-in expandable spelling checker, and mail merge capabilities. The program includes a glossary of commonly used forms, phrases, and formats and an on-screen tutorial. *Select Write* has the same text-editing features but excludes the spelling checker and the mail merge program. List price: *Select: The Word Processor* $295, *Select Write* $99. Requirements: 128K, one disk drive.
Select Information Systems, Inc.
919 Sir Francis Drake Blvd.
Kentfield, CA 94904
415/459-4003

Freestyle

A writing system for business professionals, *Freestyle* offers a line drawing feature for charts and forms and extensive outline capability. The program has a spelling checker, mail merge capabilities, a Wang-like glossary feature called Keyfiles, and an on-screen tutorial. Select's computer-assisted writing program, Outline Zoom, helps you create templates, or writing guides, for preparing documents. List price: $295. Requirements: 128K (192K recommended), two disk drives, DOS 2.00 or later version.
Select Information Systems, Inc.
919 Sir Francis Drake Blvd.
Kentfield, CA 94904
415/459-4003

WordStar, CorrectStar, MailMerge, StarIndex

A menu-aided, screen-oriented program, *WordStar* offers cursor movement by character, word, line, and beginning and end of document; block and column movement, justification; and full search capabilities. Files can be copied, merged, deleted, and automatically backed up. Print features include underlining, boldface, subscripts and superscripts, and pause for text entry.

WordStar text files can be checked with *CorrectStar*, a 65,000-word spelling checker. *CorrectStar* flags errors and suggests corrections. You can add words to a personal dictionary. *MailMerge* is a file-merging program that runs only with *WordStar*. *MailMerge* enables you to create personalized form letters, mailing labels, invoices, and boilerplate documents. *StarIndex* is an index generator that produces alphabetized indexes, tables of contents, and lists of figures and tables for *WordStar* files. List price: *WordStar* $495, *CorrectStar* $195, *MailMerge* $250, *StarIndex* $195, *WordStar Professional* (includes all four programs) $695. Requirements: 64K, one disk drive.
MicroPro International Corp.
33 San Pablo Ave.
San Rafael, CA 94903
415 499-1200

"That the program is difficult to use is a false impression. If you know how to touch-type, you can use WordStar. *I would like to see on-screen underlining, boldface, and page break indicators that adjust with mid document changes of margins."* John Horstmann, Oradell, New Jersey

"This program is not really difficult to use, and the new documentation is greatly improved. The multitude of commands simply reflects the depth of capabilities." B. G. Dudley, Coraopolis, Pennsylvania

"WordStar *is a powerful and effective program. It is particularly valuable because it has so many available word processing features, because of the extent of its general use, and because it is screen oriented, which is important to most writers. Problems include not having any patches from MicroPro, no automatic duplicate printing, no disabling process for automatic backup, no proportional justification, and poor documentation."* Ed D. Noble, San Diego, California

"WordStar *may be old and limited, but it has all the features a writer would want. Editing and block move capabilities are very handy. Who needs a split screen anyway?"* S. Kagan, Bristol, Rhode Island

MegaWriter Plus

A word processing program with mail merge capabilities and a 50,000-word spelling checker, *MegaWriter Plus* has nine programmable function keys and a document filing system for storage and retrieval on the basis of keywords, dates, and names. The program can use information from 1-2-3. List price: $179.95. Requirements: 128K, two disk drives.
Megahaus Corporation
5703 Oberlin Dr. #209
San Diego, CA 92121
619/450-1230

Spellbinder/Scientific

Designed for scientific and technical writers who use complex mathematical and chemical formulas, *Spellbinder/Scientific* displays and prints formulas and structural diagrams up to one page long, using common scientific characters and symbols. Characters from chain molecules to organic structural diagrams such as six-member rings can be altered or created. The program supports Greek characters; subscripts and superscripts; and large characters such as integral signs, sigmas, radicals, and brackets. List price: $295. Requirements: 64K, one disk drive (two recommended), graphics board.
Lexisoft, Inc.
P.O. Box 1378
Davis, CA 95617
916/758-3630

Multi-Lingual Scribe

Any combination of Hebrew, English, and Greek letters can be typed with *Multi-Lingual Scribe*. Features include word wrap, adjustable margins, and insert and delete. You can choose either the IBM Selectric or the mnemonic keyboard layout, and templates are included. List price: $149.95. Requirements: 128K, one disk drive, graphics board.
Gamma Productions, Inc.
817 Tenth St. #102
Santa Monica, CA 90403
213/451-9507

The Word Worker

A programmable word processor, *The Word Worker* has four modes: Edit, Write, Print, and BASICWP. The program offers automatic word wrap, underlining, and centering but omits right justification. It is one of the only word processing programs available for the IBM PC that can be run from a cassette recorder. A separately sold book, *Write, Edit, and Print*, shows how to modify and reprogram *The Word Worker* to individual specifications. List price: $29.95, *Write, Edit, and Print* $24.95. Requirements: 48K, one disk drive.
Design Enterprises of San Francisco
P.O. Box 14695
San Francisco, CA 94114
415/282-8813

CataList

A list manager that acts as a front-end preprocessor for 13 word processing systems, *CataList* produces envelopes, labels, and Rolodex cards. The program can format the postal codes for 106 countries. Once data is entered in a file, it can be converted to a specific word processing format for producing form letters or merging documents. *CataList* has two numeric fields for data to be summed or counted. A table of title codes for addressees may be used during entry of file additions. Eleven codes are assigned for titles, and fifteen other codes can be used for customizing. When an asterisk is entered in the first character position of a field, the corresponding field information from the previous record is repeated. *Multimate* and *WordStar* users can add and control color in text using the IBM PC Color Printer, the Data-Products Color Prism P80 and P132, and the Diablo C-150/Xerox-4770 color ink jet printer. List price: PC version $200, XT version $250. Requirements: 192K, two disk drives.
Automation Consultants International
18070 Lake Encino Dr.
Encino, CA 91316-4432
818/344-9270

Incorporate by Reference

Incorporate by Reference (IBR) merges paragraphs or citations from a library file into any standard ASCII text file. The program offers unlimited text merging; you can enter blocks of text of any length into the library file. A stored block is retrieved by typing a code name into the text file where the block should appear. The program orders paragraphs numerically and creates alphabetized, unnumbered tables of contents. List price: $125. Requirements: 64K, one disk drive.
Digital Marketing Corporation
2363 Boulevard Circle #8
Walnut Creek, CA 94595
800/826-2222, 415/947-1000

WordMARC

A word processing program designed for offices, *WordMARC* includes a spelling checker and mail merge capabilities. You can create and edit equations containing Greek and mathematical symbols. Other features include definable function keys, menus, and formats; background printing; column or block moves; horizontal scrolling; and an abbreviation glossary. Users can access DOS, perform system functions, or run other applications programs without exiting the program. List price: $49[illegible] Requirements: 256K, two disk drives.
MARC Software
260 Sheridan Ave.
Palo Alto, CA 94306
415/326-1971

Select Bilingual

A bilingual word processor, *Select Bilingual* includes both Spanish and English menus, help screens, and commands. The program contains a Spanish/English on-screen tutorial, a Spanish/English spelling checker, and a mail merge function. Other features include justification and on-screen underlining and boldface. List price: $395. Requirements: 128K, two disk drives.
Select Information Systems, Inc.
919 Sir Francis Drake Blvd.
Kentfield, CA 94904
415/459-4003

Indix

An automatic index generator, *Indix* produces a list of words, phrases, and concepts with their respective page numbers that can then be formatted into a standard index. *Indix* offers flexibility when you specify which words, phrases, and concepts are to be indexed. Digits, uppercase words, and specific sections of the document can be excluded. Page numbers can contain nonnumerical characters. The index is ordered alphabetically and uses ranges of page numbers where suitable. List price: $95. Requirements: 128K, one disk drive.
Emerging Technology
1877 Broadway
Boulder, CO 80302
303/447-9495

"Indix *does not just automatically spit out an index. It is the tool a writer can use to make an index. The writer still must exercise a considerable amount of judgment on the product. Indexes have added a new dimension to my technical reports.*" Robert Bellandi, Syracuse, New York

EasyWriter 1.15

An improved version of *EasyWriter 1.10*, *EasyWriter 1.15* is a menu-driven word processor that makes full use of the PC function keys. The program provides block move of paragraphs and sentences, global search and replace, headers and footers, automatic word count, and an undo key. List price: $175. Requirements: 64K (128K recommended), one disk drive.
IBM
Systems Products Division
P.O. Box 1328
Boca Raton, FL 33432
800/447-4700, 800/322-4400 Illinois, 800/447-0890 Alaska and Hawaii

"*This package proved beneficial for both school and personal uses. All reports, memos, agendas, programs, letters, envelopes, study sheets, etc., have been typed using* EasyWriter *all year. There has never been a problem.*" Sister Mary Josanne, Los Angeles, California

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- Math Interface Library for the IBM FORTRAN Library
- Math Macro Library for the IBM MACRO Assembler

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- Complete operating instructions.
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87 SOFTWARE PAK $180.

- Diskette with all software and source code.
- Complete operating instructions.
- One Year Software Update Service.

87 MACRO PAK $245.

- Tested 8087 in easy-to-install chip carrier with installation instructions.
- Diskette with Math Macro Library for the IBM MACRO Assembler.
- Complete Operating Instructions.

Hauppauge Computer Works Inc.
358 Veteran Memorial Highway,
Suite MSP
Commack, New York 11725
516-360-3827

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THE NEW 87 MATH PAK NOW INCLUDES: from the PC Library of BRADY Publications, the book entitled 8087 Applications and Programs for the IBM-PC by Richard Startz.

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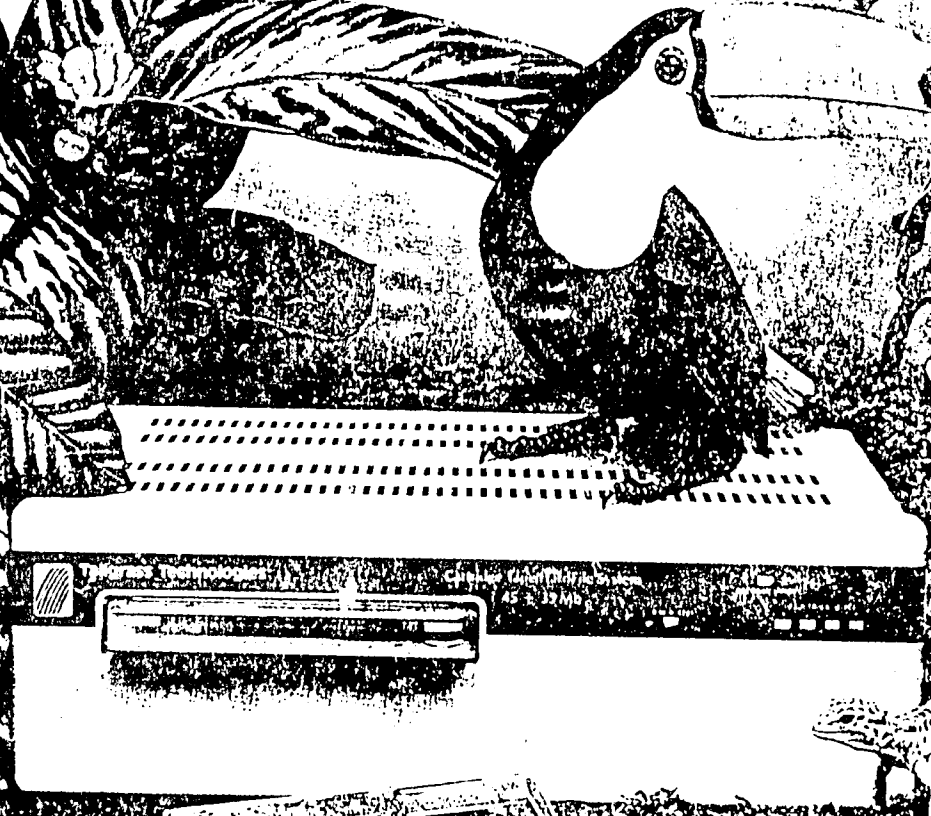

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IBM-XT Cartridge
Tape Backup

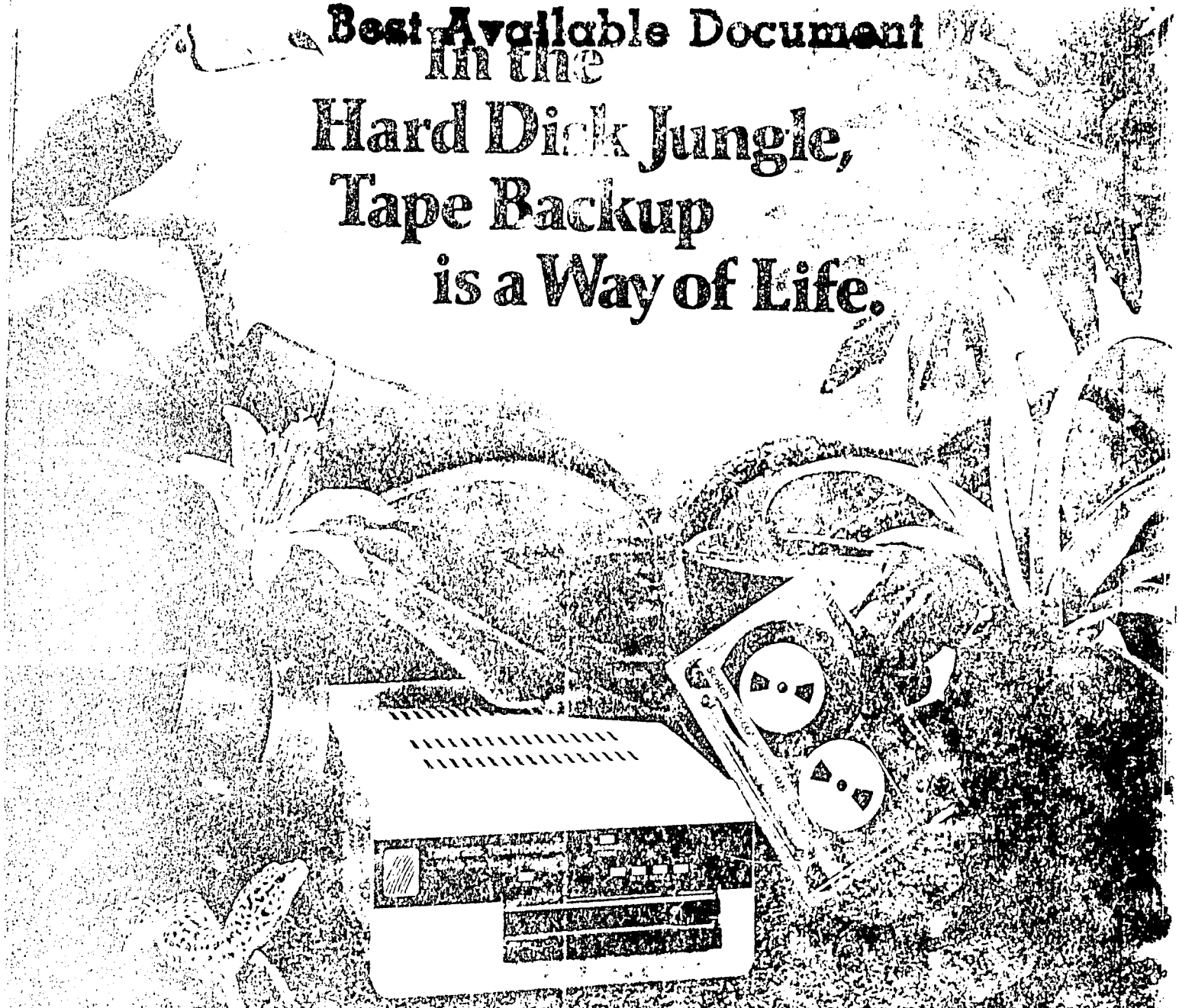
World Headquarters: Tallgrass Technologies Corp., 11100 West 82nd St., Overland Park, KS 66214/913-492-6002/telex 415-8107 TGT UR
Canadian Distributor: [illegible] Waterloo, Ontario N2L 3R9/519-884-1541
CompuServe/1075 W. 8th St./Vancouver, B.C. V6H 1V7/604-[illegible]
European Distributor: CPS Computer Group, LTD., Birmingham, England B27 6HT/(021) 707-[illegible]
Australian Headquarters: Tallgrass Technologies/Australia/[illegible] Suite 12/30 Great North Road/Five Dock/Sydney, N.S.W. 2046/(02) [illegible]

Tallgrass Technologies corporation

Circle 188 on reader-service card

Best Available Document

In the Hard Disk Jungle, Tape Backup is a Way of Life.



[illegible] floppy disk backup [illegible] to allow tape backup [illegible] the [illegible] catastrophic loss of data from your [illegible] Professional fixed disk because of [illegible] error or inopportune power failure. Without [illegible] backup, you're on dangerous ground.

[illegible] TC-160 gives you 60 Mbytes of [illegible] tape backup and archival capacity using the [illegible] standard RC-751 personal computer tape. [illegible] backup is fast and easy, even with [illegible] drive.

TALLGRASS INNOVATIVE FEATURES

- [illegible] OF FORMATTED STORAGE on [illegible] industry standard DC-300A [illegible]
- [illegible] (Personal computer tape format) allows [illegible] data and manipulation through TMS [illegible] system.
- [illegible] Business Machines Corp.
- [illegible] INDIVIDUAL DIRECTORY [illegible] each of the [illegible] eleven tape tracks makes locating individual files easy.
- MORE THAN JUST A TAPE BACKUP DEVICE: the TC-160 is a complete archival [illegible] system with easy access to individual [illegible]. In the hard disk jungle, tape backup has become a way of life.

Available from COMPUTERLAND, Entré Computer Centers, Micro Age, Computer Stores and other participating computer dealers.

[illegible]

Tallgrass Technologies Corporation

Circle 188 on reader service card

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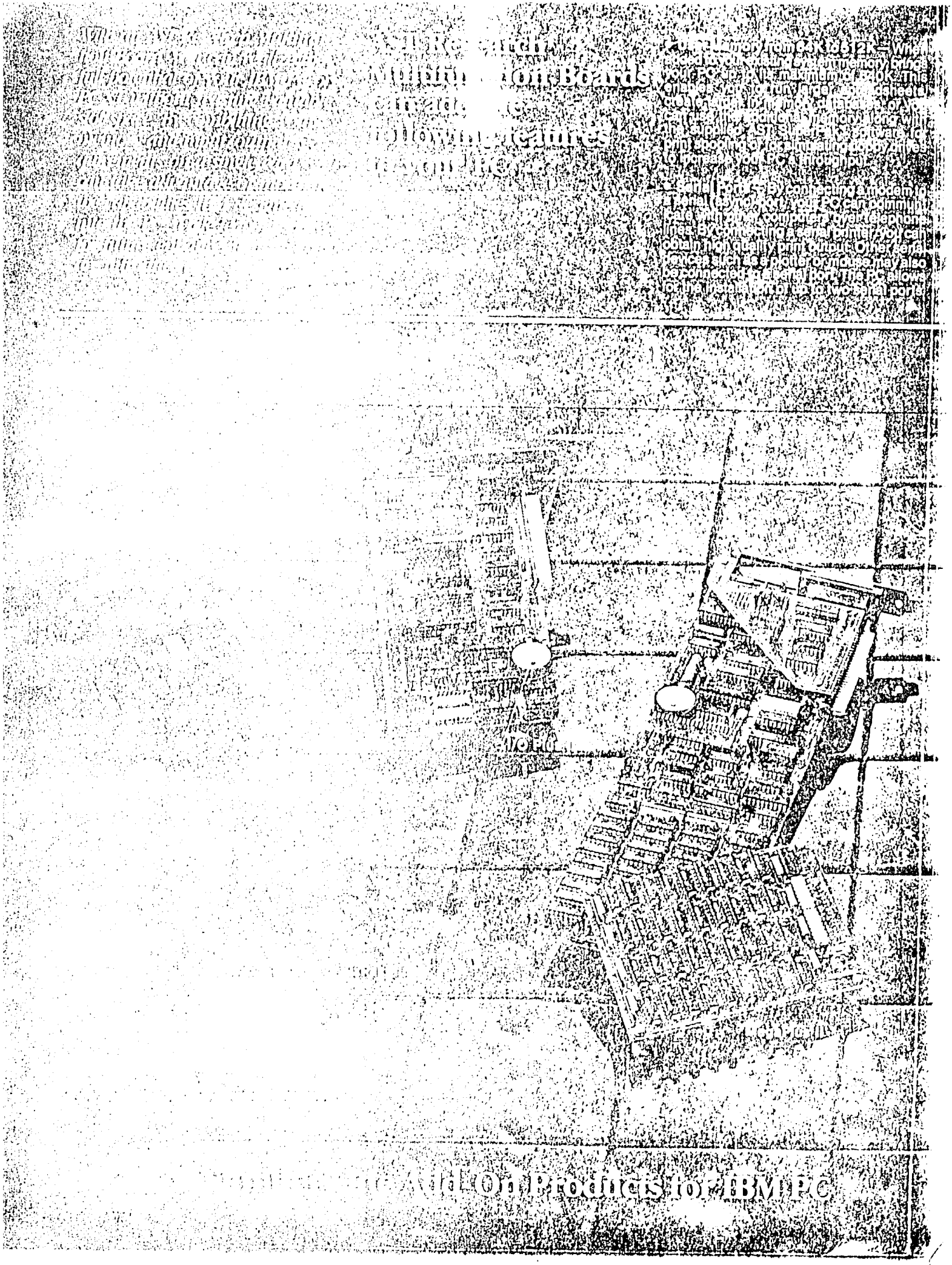
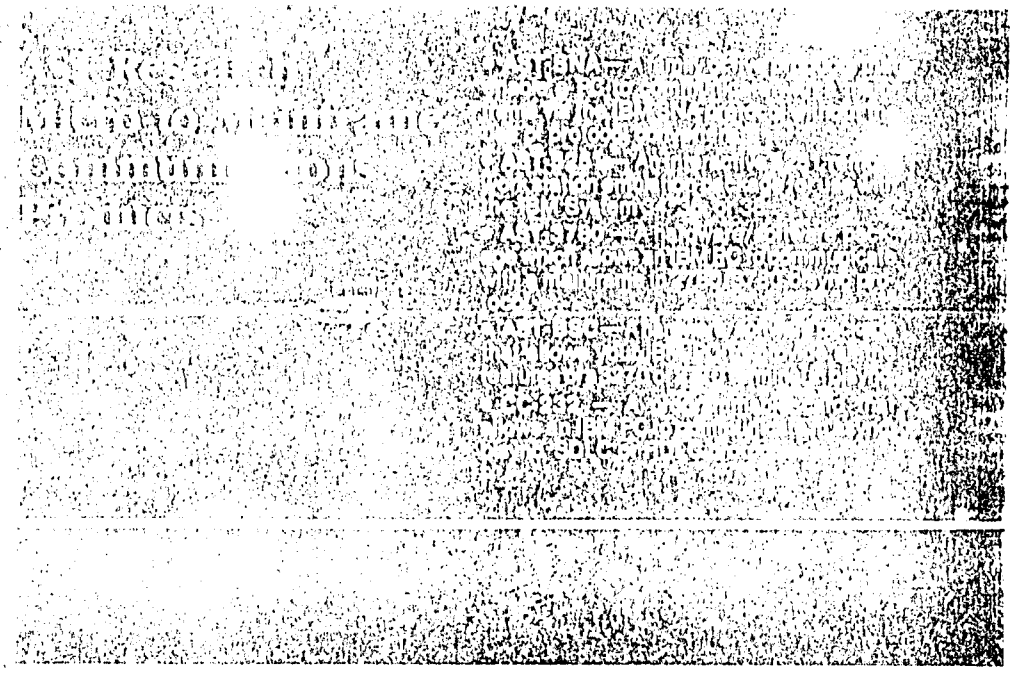
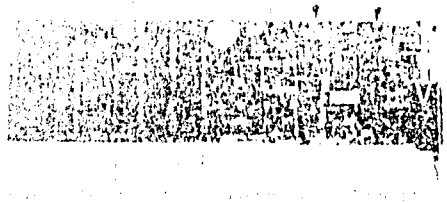
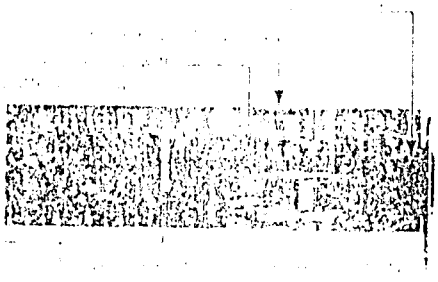


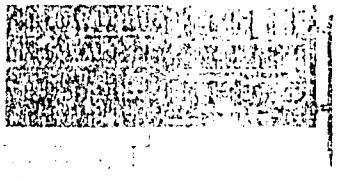


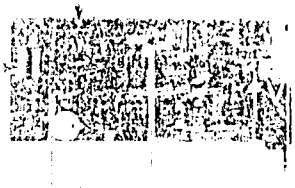
ComboPlus



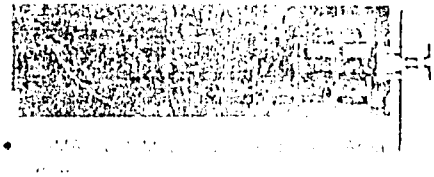


MP Expansion Memory

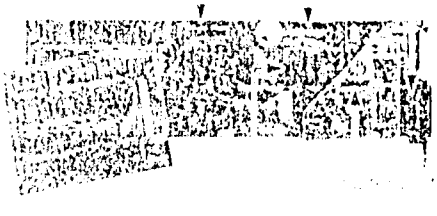




AST-PCnet



Meg(Plus)



AST RESEARCH INC.

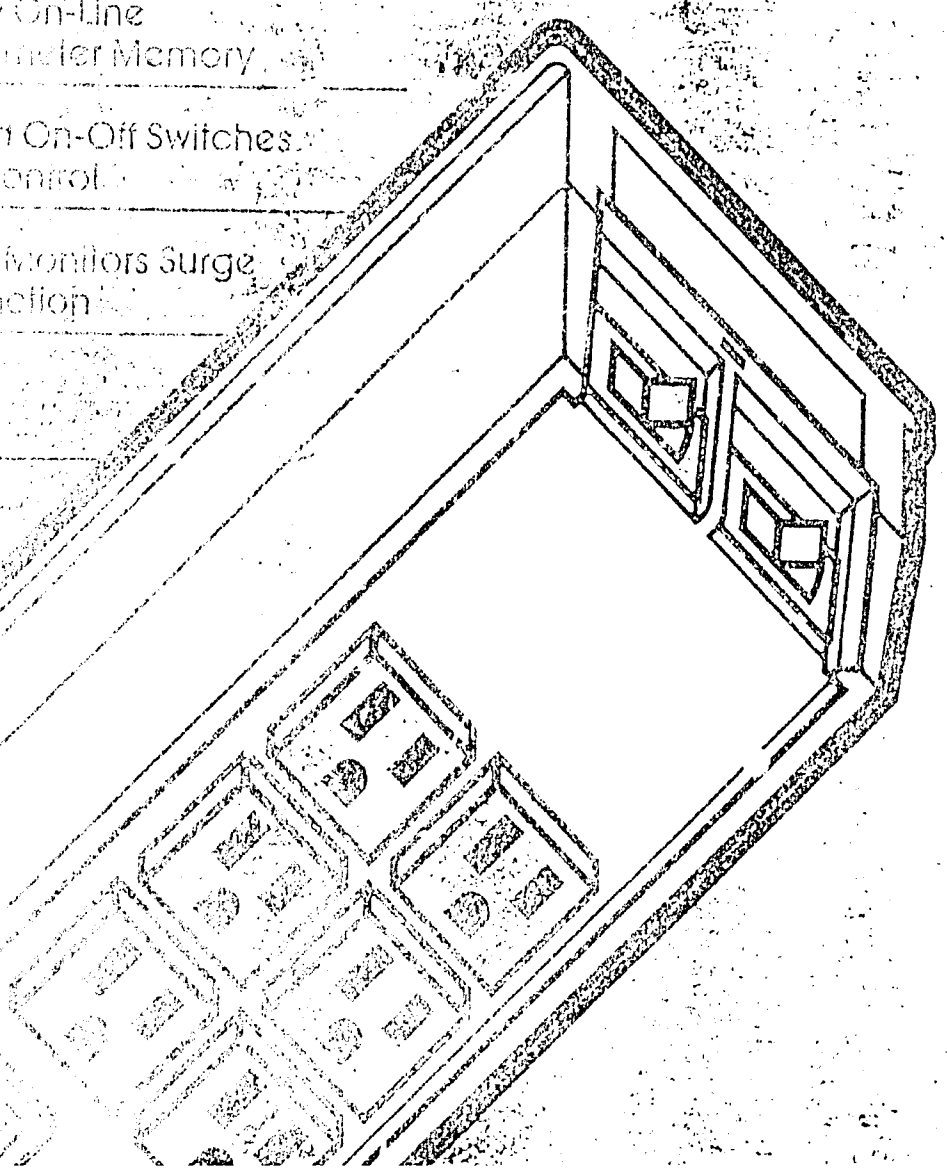
Circle 18 on reader service card

Computer Station Accessories

Wire Tree Plus™

Power Source Plus Modem Protection

- Protection For Phone/Modem Telephone Communication Lines
- Solid State Fast Voltage Surge Suppression and Interference Filter
- Continuously On-Line Ready For Computer Memory
- Two Illuminated On-Off Switches Selective Control
- Indicator Monitors Surge Suppressor Function
- One Year Warranty



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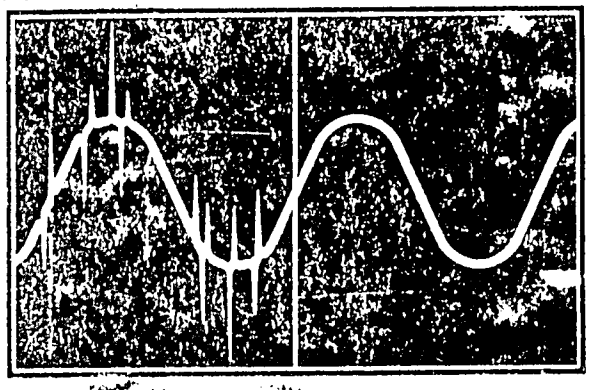
Computer Station Accessories

The Wire Tree Plus™

A Filtered Power Source Plus Modem Protection

The Wire Tree Plus™ is a unique, six outlet, filtered power source and modem protection device for your microcomputer workstation. Equipment powered directly from wall outlets is frequently subjected to damaging voltage spikes or surges. Such transients can damage semi-conductor and electronic components. The Wire Tree Plus™ contains spike and surge limiting circuitry to absorb this harmful energy. Acting within one nanosecond, the silicon transient suppressor clips the spike and dissipates the excess energy providing clean power to your system. A spike or surge containing energy in excess of the suppressor rating will cause the internal microfuse to open removing the surge protector from the circuit and illuminating the red LED for positive indication.

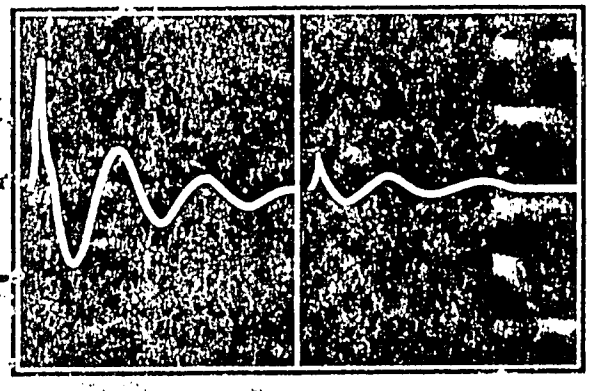


Voltage Surge enters The Wire Tree Plus™

Constant power output from The Wire Tree Plus™

The Wire Tree Plus™ offers telephone data line protection for modems and computers through two RJ11 modular receptacles. By plugging both the telephone line and modem into the Wire Tree Plus™, the equipment is protected from damaging spike energy present on the data lines. The two stage circuit featuring a heavy duty gas tube surge arrestor acting in conjunction with a fast acting silicon surge suppressor harmlessly dissipates spike energy.

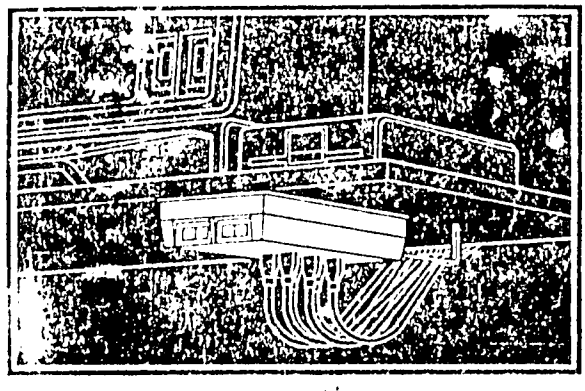
A filter which attenuates Radio Frequency Interference before it penetrates computer circuits or peripheral equipment is included between the input power line and the six outlets. RFI will cause computers to malfunction by creating erroneous signals. The Wire Tree Plus™ effectively filters out transverse and common mode noise by means of a PI type filter. Common mode noise is attenuated by a minimum of 40db from 600KHz to 15MHz. Transverse mode noise is attenuated by a minimum of 40db from 200KHz to 40MHz.



Interference entering The Wire Tree Plus™

Filtered power output from The Wire Tree Plus™

The Wire Tree Plus™ mounting arrangement conveniently locates your system's control switches at the front of the workstation. A separate illuminated switch is provided for each of the two rows of outlets allowing flexibility in powering the computer, monitor, printer and modem. The switches are recessed to prevent inadvertent shut down and loss of on-line data. Five of the six outlets are switchable with the sixth continuously on-line to retain information in volatile memory or for power applications such as clocks.



The Wire Tree Plus™

A unique Cable Support organizes the power cords to one side and drapes them to the rear of the workstation. This minimizes slack wires, thus substantially improving the appearance of your workstation while providing system safety and up front, independent power control.

Technical Specification

Circuit Breaker: 15 Amp.

Power Cord: 9 Foot

Mounting Plate: All Surface

R.F.I. Filter: PCB Mounted

Rated Voltage: 125 VAC

Rated Current: 12A

Temperature Range:
– 25 C° to + 85 C°

Test Voltage:
1750 Vdc for 1 Sec. Line-gnd.

Capacitance Tolerance: ± 20%

Inductor Core Material: Ferrite

Inductance Tolerance: ± 25%

Silicon Transient Suppressor:

- Continuous Peak Voltage: 185V (130V rms)
- Peak Breakdown Voltage @ 1 ma: 209-231V (148-163V rms)
- Maximum Peak Clamp Voltage at I peak of 4.6A = 328V (232V rms)
- Peak Power Dissipation: 1.5 Kw, 1 msec.
- Energy Rating: 1.5 Joules
- Typical Response Time: approximately 1 nano second

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Made and Printed In U.S.A.

Manufactured by:
DIALIGHT CORP. Brooklyn, NY 11237

What if. . .
your spreadsheet is
too wide for your printer?

Now you can print all the columns of your spreadsheet, all at one time, all on one continuous page. SIDEWAYS rotates your spreadsheet by 90 degrees as it prints out, so your spreadsheet columns need never fall off the edge of your printer paper again.

SIDEWAYS can print any normal (ASCII) text file of virtually any width. It will print right through the perforations of your printer paper if necessary.

SIDEWAYS offers a choice of a wide variety of type sizes, gives you complete control over margins, spacing between characters, and spacing between lines, and provides a double-strike option for added print density.

SIDEWAYS is compatible with Lotus 1-2-3, Symphony, VisiCalc, Multiplan, and SuperCalc, as well as with most word processors and editors. To print a spreadsheet, first use your spreadsheet program's "print" command to create a "print file" on your disk. Then run SIDEWAYS, tell it the name of the print file you just created, and SIDEWAYS does the rest.

FUNK SOFT WARE

Funk Software, Inc. P.O. Box 1290 Cambridge, MA 02238 (617) 497-6339

by Funk Software
P.O. Box 1290
Cambridge, MA 0223
(617) 497-6339

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WHAT YOU NEED

To run SIDEWAYS you will need an IBM Personal Computer or compatible, PC-DOS, either a parallel or serial printer interface, and a dot-matrix printer with dot-addressable graphics capability. For a list of currently supported printers, refer to the separately enclosed "Installation Guide".

HOW IT WORKS

SIDEWAYS is a program which reads a file from your disk, and prints it sideways on your dot-matrix printer.

Using SIDEWAYS is a two-step process. First, use your spreadsheet program (or other software) to create a file on your disk in printable form. Then, run SIDEWAYS, and tell it the name of the print file you created.

The operation of the SIDEWAYS program itself is described in the first part of this manual. The latter part of the manual describes how to go about creating print files using various popular spreadsheet programs.

WHAT'S ON YOUR DISKETTE

Your SIDEWAYS diskette contains the following files:

SIDEWAYS.COM	this is the SIDEWAYS program
INSTALL.EXE	this is a program which allows you to configure SIDEWAYS for the particular printer model you are using
SAMPLE.PRN	this is a sample spreadsheet print file, which can be used immediately to demo sideways printing.

BEFORE YOU BEGIN

Backing up

Before you do anything else, it would be a good idea to back up the files on your SIDEWAYS diskette.

First, you will need a blank, formatted diskette to serve as the backup. Load your DOS diskette, and place a blank diskette in drive B. Then type:

```
A>FORMAT B: ↵
```

Follow the instructions on the screen as the system asks you to insert a diskette in drive B. When formatting is complete, the system will ask you if you would like to format another diskette—respond by typing N. The A> prompt will now appear

Remove your DOS diskette from drive A and replace it with your SIDEWAYS diskette. Now type:

```
A>COPY *.* B: ↵
```

This will back up the files on your SIDEWAYS diskette to the blank diskette, which you should label and store in a safe place.

Installing a Printer

Before you can use the SIDEWAYS program, you must tell it the type of printer you have by running the INSTALL program.

Load DOS, insert the SIDEWAYS diskette in drive A, and type:

```
A>INSTALL ↵
```

The INSTALL program will ask you which printer you use. After you tell it, it will modify your SIDEWAYS program to operate with that printer.

The INSTALL program can be run over again as often as you like.

Refer to the separately enclosed "Installation Guide" for a list of currently supported printers, as well as for information on particular printers.