

PASCAL USER'S GROUP

Pascal News

(FORMERLY PASCAL NEWSLETTER)

NUMBERS 9 AND 10 (COMBINED ISSUE)

COMMUNICATIONS ABOUT THE PROGRAMMING LANGUAGE PASCAL BY PASCALERS

SEPTEMBER, 1977

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POLICY: PASCAL NEWS (77/09/01)

- * Pascal News is the official but informal publication of the User's Group.

Pascal News contains all we (the editors) know about Pascal; we use it as the vehicle to answer all inquiries because our physical energy and resources for answering individual requests are finite. As PUG grows, we unfortunately succumb to the reality of (1) having to insist that people who need to know "about Pascal" join PUG and read Pascal News - that is why we spend time to produce it! and (2) refusing to return phone calls or answer letters full of questions - we will pass the questions on to the readership of Pascal News. Please understand what the collective effect of individual inquiries has at the "concentrators" (our phones and mailboxes). We are trying honestly to say: "we cannot promise more than we can do."

- * An attempt is made to produce Pascal News 4 times during an academic year from July 1 to June 30; usually September, November, February, and May.
- * ALL THE NEWS THAT FITS, WE PRINT. Please send written material for Pascal News single spaced and in camera-ready form. Use lines 18.5 cm wide!
- * Remember: ALL LETTERS TO US WILL BE PRINTED UNLESS THEY CONTAIN A REQUEST TO THE CONTRARY.
- * Pascal News is divided into flexible sections:

POLICY - tries to explain the way we do things (ALL PURPOSE COUPON, etc.).

EDITOR'S CONTRIBUTION - passes along the opinion and point of view of the editor together with changes in the mechanics of PUG operation, etc.

HERE AND THERE WITH PASCAL - presents news from people, conference announcements and reports, new books and articles (including reviews), notices of Pascal applications, history, membership rosters, etc.

ARTICLES - contains formal, submitted contributions (such as Pascal philosophy, use of Pascal as a teaching tool, use of Pascal at different computer installations, how to promote Pascal, etc.

OPEN FORUM FOR MEMBERS - contains short, informal correspondence among members which is of interest to the readership of Pascal News.

IMPLEMENTATION NOTES - reports news of Pascal implementations: contacts for maintainers, implementors, distributors, and documentors of various implementations as well as where to send bug reports. Qualitative and quantitative descriptions and comparisons of various implementations are publicized. Sections contain information about Software Writing Tools for a Pascal environment, Portable Pascals, Pascal Variants, Feature Implementation Notes, Machine Dependent Implementations, etc.

- * Volunteer editors are:

Andy Mickel - editor
Tim Bonham and Jim Miner - Implementation Notes editors
Sara Graffunder - Here and There editor
John Strait and John Easton - Tasks editors
David Barron and Rich Stevens - Books and Articles editors
Rich Cichelli - Software Tools and Applications editor
George Richmond - past editor (issues 1 through 4)

USER'S

GROUP

ALL PURPOSE COUPON

(77/09/01) •

Pascal User's Group, c/o Andy Mickel
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208 SE Union Street
University of Minnesota
Minneapolis, MN 55455 USA

- + Clip, photocopy, or
- + reproduce, etc. and
- + mail to this address.

// Please enter me as a new member of the PASCAL USER'S GROUP for ___ Academic year(s) ending June 30 _____. I shall receive all 4 issues of Pascal News for each year. Enclosed please find _____ (\$4.00 for each year). (* When joining from overseas, check the Pascal News POLICY section on the reverse side for a PUG "regional representative." *)

// Please renew my membership in PASCAL USER'S GROUP for ___ Academic year(s) ending June 30 _____. Enclosed please find _____ (\$4.00 for each year).

// Please send a copy of Pascal News Number(s) _____. (* See the Pascal News POLICY section on the reverse side for prices and issues available. *)

// My new address phone is printed below. Please use it from now on. I'll enclose an old mailing label if I can find one.

// You messed up my address phone. See below.

// Enclosed please find a contribution (such as what we are doing with Pascal at our computer installation), idea, article, or opinion which I wish to submit for publication in the next issue of Pascal News. (* Please send bug reports to the maintainer of the appropriate implementation listed in the Pascal News IMPLEMENTATION NOTES section. *)

// None of the above. _____

Other comments: From: name _____
mailing address _____

phone _____
computer system(s) _____
date _____

(* Your phone number aids communication with other PUG members. *)

JOINING PASCAL USER'S GROUP?

- membership is open to anyone: particularly the Pascal user, teacher, maintainer, implementor, distributor, or just plain fan. Memberships from libraries are also encouraged.
- please enclose the proper prepayment - we will not bill you.
- please do not send us purchase orders - we cannot endure the paper work! (if you are trying to get your organization to pay for your membership, think of the cost of paperwork involved for such a small sum as a PUG membership).
- when you join PUG anytime within an academic year: July 1 to June 30, you will receive all issues of Pascal News for that year unless you request otherwise. You will receive a membership receipt.
- please remember that PUG is run by volunteers who don't consider themselves in the "publishing business." We consider production of Pascal News as simply a means toward the end of promoting Pascal and communicating news of events surrounding Pascal to persons interested in Pascal. We are simply interested in the news ourselves and prefer to share it through Pascal News (rather than having to answer individually every letter and phone call). We desire to keep paperwork to a minimum because we have other work to do.

JOINING THROUGH "REGIONAL REPRESENTATIVES" ?

- anyone can join through PUG(USA) - address on reverse side. International telephone: 1-612-376-7290. PUG(USA) produces Pascal News and keeps all mailing addresses on a common list. Regional representatives collect memberships as a service and reprint and distribute Pascal News using mailing labels sent from PUG(USA) which speeds up delivery overseas.

European Region (Europe, North Africa, Middle and Near East):
send £2.50 to: Pascal Users' Group (UK)
c/o Computer Studies Group
Mathematics Department
The University
Southampton SO9 5NH
United Kingdom
telephone: 44-703-559122 x700

Australasian Region (Australia, New Zealand, Indonesia, Malaysia):
send \$A10 to: Pascal Users Group (AUS)
c/o Arthur Sale
Dept. of Information Science
University of Tasmania
GPO Box 252C
Hobart, Tasmania 7001
Australia
telephone: 23 0561

RENEWING?

- please renew early (before August) and please write us a line or two to tell us what you are doing with Pascal, and tell us what you think of PUG and Pascal News to help keep us honest. To save PUG postage, we do not send receipts when you renew.

ORDERING BACKISSUES OR EXTRA ISSUES?

Our unusual policy of automatically sending all issues of Pascal News to anyone who joins within an academic year (July 1 to June 30) means that we eliminate many requests for backissues ahead of time, and we don't have to reprint important information in every issue - especially about Pascal implementations!

- Issues 1, 2, 3, and 4 (January, 1974 - August, 1976) are out of print.
- Issues 5, 6, 7, and 8 (September, 1976 - May, 1977):
Less than 40 copies each remain at PUG(USA) available for \$2 each.
Less than 20 copies each remain at PUG(UK) available for £1 each or £2.50 for 6,7,8.
None available at PUG(AUS): write to PUG(USA) or PUG(UK).
- Extra single copies of new issues are \$2 each - PUG(USA); £1 each - PUG(UK); and \$A3 each - PUG(AUS).

SENDING MATERIAL FOR PUBLICATION?

(such as ideas, queries, articles, letters, opinions, notices, news, implementation information, conference announcements and reports, etc.) "ALL THE NEWS THAT FITS, WE PRINT." Please send written material for Pascal News single spaced and in camera-ready form. Use lines 18.5 cm wide! Remember: ALL LETTERS TO US WILL BE PRINTED UNLESS THEY CONTAIN A REQUEST TO THE CONTRARY.

MISCELLANEOUS INQUIRIES? Please remember we will use Pascal News as the vehicle to answer all inquiries and regret to be unable to answer individual requests.



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TWIN CITIES

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New Developments - Micro/Personal Computers

Several PUG members took my request seriously to write to several of the personal computing journals to promote Pascal over BASIC (see Editor's Contribution PUGN 8). David Mundie, George Cohn, and Tim Bonham have written letters. At Frank Brewster's and Rich Cichelli's urging, I sent personal letters and a free copy of #8 (the only free copies we had given) to the editors of 14 computing journals. We received warm responses from half a dozen. Also we've been getting new members from their readership, some who are so curious to know about Pascal that they are dying to get this issue of PUGN! I'm really encouraged at these developments because these computers represent the future and we have an early start (unlike on the current dinosaur systems).

See the OPEN FORUM section.

Pascal News

We changed the name to avoid confusion by people who think a newsletter is 4 pages long. This issue is a combined one because it contains so much material - and it is also late. We had to revise nearly everything: the cover, the coupon, policy, and do a summary for the implementation notes! This has good side effects because PUGN 8 was late in Europe, and renewals have been slow to come in. Next issue will be in February. Deadline for material is the last day in December: (77/12/31).

New Policies

Look at all the new editors! Please read the revised policy pages on the inside covers (front and back). The major change is that we are declaring that we are tired of processing purchase orders and answering requests for information "about Pascal" from people who won't join PUG and read Pascal News. It may sound strange, but we print everything we know about Pascal in Pascal News.

Back Issues

It is really difficult to plan ahead on backissues with a growing membership. Nevertheless we made it through last year with some extra copies of each issue. But we incurred some tremendous distribution problems which caused unjustified delays in sending back issues to people who joined PUG after mid-February. I apologize, and hope that we have learned enough from our mistakes to do better this year.

Membership

We began collecting PUG memberships on 76/03/03. Here are some interesting membership totals: 317 on 76/08/13 (#5 to press); 368 on 76/09/09 (#5 mailed); 516 on 76/11/14 (#6 to press); 560 on 76/12/10 (#6 mailed); 598 on 76/12/29 (#7 to press); 644 on 77/01/13 (#7 mailed); 943 on 77/04/26 (#8 to press); 984 on 77/05/12 (#8 mailed); 1095 on 77/06/30 (end of year); 1306 on 77/09/07 as I write this (759 active). We have 211 new members and 560 renewals since 77/07/01 with renewals still rolling in.

PUG Finances

I last printed information in PUGN 6. Last year (our first) we promised and delivered 4 issues of PUG Newsletter. What we did not know was how popular PUG was going to be. We also delivered a few things we did not promise: 230 copies of backissue #4, mass mailings to get to new and old people, letters to implementors to get compiler information and unfortunately, slow service to late joiners (sorry, but we wish you had joined earlier).

See the HERE AND THERE section for details under "PUG Finances". We show a small loss - almost exactly 1% - and our crude accounting knowledge doesn't account for all the back issues produced with 76-77 money and sold in 77-78 (since July 1, we have sold 243 at PUG(USA) alone. So I claim we did okay.

Andy - 77/09/07.

Here is another potpourri of topics:

Pascal Newsletter #8

"Green on green" was not our idea (neither was the thick paper - it destroyed our poverty image!). It was a giant disappointment to have worked so hard on #8 and see it come out this way. We agree with the 20 or so people who gently suggested that "we say it in black and white." We were faced with wasting paper and making the newsletter 3 weeks late if we reprinted, or sending it out. We sent it out and were reimbursed by the printer for the extra postage and heavy paper costs. PUGN 8 from the UK was over 2 months late due to circumstances beyond their control, but it was black on white!

Pascal Jobs

Who says you can't get a job "in the real world" using Pascal? Herb Rubenstein, the first research assistant to work for us at the University Computer Center who learned Pascal before he learned FORTRAN, picked Colorado as a place to live when he graduated with a B. Sci. in Computer Science from the University of Minnesota and then he began job hunting. In 2 months he landed a job with a rapidly growing engineering peripherals firm, AutoTrol, and is working almost exclusively with Pascal.

Also see the OPEN FORUM section for a letter from Neil Barta.

New Australasian Distribution Center for PUG

To solve problems with slow mail to Australia (as well as currency exchange), Arthur Sale, prolific PUGN contributor at the University of Tasmania, has kindly set up a distribution center this summer (winter) much like Judy Mullins and David Barron did for Europe a year ago.

The area served is Australia, New Zealand, Indonesia, and Malaysia. We at PUG(USA) are confused about why the price is so high; apparently we were to receive a letter from Arthur over 2 months ago with the details, but it was lost in the mail. Other details are on the reverse side of the ALL PURPOSE COUPON.

Computer Companies Using Pascal

It is past time to print a list we've been keeping of computer companies who are seriously using Pascal. This is so we all can argue back that "Pascal is being used for serious real world work" when accused otherwise!

Total conversion internally to the company:

Texas Instruments, January, 1977 ("from micros to super computers")

Harris Data Communications, March, 1977 ("Pascal is our language - replacing FORTRAN and COBOL" - Tom Spurrier.)

Companies Using Pascal for future software systems:

Cray Research (CRAY-2)

Control Data Corporation (Cyber 270 series)(They have already been using it for the 2550 and the Cyber 18)

DATA 100 Corporation (model 78)

Companies marketing Pascal as a user product:

Honeywell; Computer Automation; Four Phase Systems; Varian Data Machines (Sperry Univac).

Editor's Contribution

Here and There With Pascal

(* Here are extracts from almost all of PUG's mail. To reiterate what we've said elsewhere, many of the inquiries we get are answered in previous issues. If you are a member, please try to find answers to your questions from Pascal News before you write to us. If you aren't a member and you want information that's in an issue that's already out, we'll tell you to join rather than to answer each inquiry with a personal letter. *)

Attn: Production Automation Project, Univ. of Rochester Dept. of Elec. Engr., Rochester, NY 14627 (Aristides Requicha): "I also would appreciate any information you might have on the existence and availability of reliable and efficient Pascal compilers for the PDP-11/40. We normally use the RT-11 operating system." (* 77/6/28 *)

Attn: Centro Ciencias de la Computacion, Universidad Catolica de Chile, Casilla 114 D, Santiago, Chile: "Is there any FULL PASCAL implementation for the IBM 370?" (* 77/6/7 *)

Bill Barabash, Dept. of Computer Sci., State Univ. of NY, Stony Brook, NY 11794: "Yes. I want to be the first one on my block to RENEW my membership in the Pascal User's Group. I enclose a check for \$4.00 which entitles me to issues 9-12 of the newsletter plus a Captain Pascal secret decoder ring which glows in the dark. . . ." (* 77/6/8 *)

Philip N. Bergstresser, 128 Jackson Ave., Madison, AL 35758: "TRW has a PASCAL program on the CDC 7600 and TI-ASC with 40000 statements and 1100 procedures, REVS, the Requirements Engineering and Validation System, supporting interactive color graphics, CALCOMP plotting, and a relational data base. We have implemented a complete 7600 PASCAL system." (* 77/8/22 *)

Gus Bjorklund, 2250 Coppersmith Square, Reston, VA 22091: "I am presently working on a Pascal compiler for the IBM Series 1, and should be finished in September 1977." (* 77/6/22 *)

Kenneth Bowles, P.O. Box 1123, Rancho Santa Fe, CA 92067: "Looks like we will be working with CONDUIT on getting a (Standard) ANSI BASIC running under our PASCAL system. Object: entice Basic users over to PASCAL by making a switch very convenient. This will be the only truly portable BASIC we know of." (* 77/6/22 *)

Bill Brennan, 39 Jody Drive, Norristown, PA 19401: "I am presently engaged in implementing PASCAL for Sperry-Univac 9000 computers. (This activity is for my education mostly, not for release.) I certainly could use the information your newsletter will provide. For your information, I heard of the PASCAL user's group from a notice in 'Creative Computing.'" (* 77/9/1 *)

Arthur A. Brown, 1101 New Hampshire Ave. NW, Washington, DC 20037: "I am a professional translator of Russian mathematics, and will be glad to abstract the Proceedings of the All-Union Symposium on Implementation Techniques for New Programming Languages. (* We sent them off right away, but just received word from Arthur Brown that an English translation has been published as Vol. 47 of Springer-Verlag's Lecture Notes in Computer Science. *) (* 77/6/10 *)

Thomas W. Burnett, Computer Center, Dickinson College, Carlisle, PA 17013: "What PASCAL is available for a PDP-11 running RSTS?" (* 77/6/30 *)

Edwin J. Calda, Dept. E152, AAI Corp., P.O. Box 6767, Baltimore, MD 21204: "Would appreciate information concerning the availability of Pascal for the SEL 8000 series or SEL 32." (* 77/7/19 *)

Patrick Chevaux, DEC, Quai Ernest Ansermet 20, B.P. 23, CH-1211 - Geneva 8, Switzerland: "I am urgently looking for a PASCAL compiler running on PDP-11 under RSX-11M operating system, and I wonder if you know about such a product. If so, could you please give me a few indications about it, as well as the person to contact and perhaps how to obtain it." (* 77/7/11 *)

D. Michael Clarkson, DBMS Research and Development, California Software Products, 525 N. Cabrillo Park Dr., Suite 300, Santa Ana, CA 92701: "My company is currently involved in implementing a lot of high-level transportable system software using PASCAL." (* 77/6/27 *)

Kurt Cockrum, 3398 Utah, Riverside, CA 92507: "R. A. Lovestedt should get in touch with Tom Payne, Math Dept., University of California at Riverside, Riverside, CA 92507 for information on HP-3000 implementations of Pascal. I believe that John Hayward of UCR has written a P-code interpreter that runs on the 3000. "Are there any HOBBYISTS doing anything with Pascal? Most of us can't handle tapes (except paper) and some of us are poor." (* 77/6/6 *)

John Collins, 3M Co., Bldg. 235-F247, St. Paul, MN 55101: "We are considering using PASCAL as a Systems Implementation Language for microprocessor based systems, using a PDP11 as a host for cross-compilation and system monitoring." (* 77/6/13 *)

Larry Crane, EDS, 1200 Locust, Des Moines, IA 50309: "Thanks for sending us the PUG newsletters, hopefully we'll be able to get ahold of something good. If not we'll just have to develop it. With luck we'll have an operating system in Pascal. To the bit bucket with Fortran, even COBOL will be overcome. Long Live the Computocracy." (* 77/5/16 *)

(* Response to Andy's letters to personal computing publications has been heartening, if somewhat humorous at times. In Creative Computing, for example, the "Pasacal" User's Group was mentioned, but the address got lost in the press. Nonetheless, high school student Steven Trapp, 5020 Mulcare Drive, Columbia Heights, MN 55421, deduced the address from Andy's name and the name of the building and wrote to ask for an all-purpose coupon. *)

Jack Crone, Systems Analyst, USC School of Medicine, Hoffman Res. Ctr., Rm. 805, 2025 Zonal Ave., Los Angeles, CA 90033: (* From his letter which we saw in Byte, May 1977. *) "At present, supporting a full blown high level language compiler is quite an achievement for a personal computer; supporting several is out of the question. For this reason it is important to make the best possible selection and to select some obscure educational vernacular such as PASCAL because it is esthetically more pleasing, and [sic] would leave personal computing where it is right now: a lot of hardware with very little software."

Kenneth A. Dickey, 1662 Stromberg, Arcata, CA 95521: "I am especially interested in [Pascal] applications dealing with environmental modeling, approximations, simultaneous equations, and text editing." (* 77/7/11 *)

John Dickinson, Dept. of Elec. Engr., Univ. of Idaho, Moscow, ID 83843: "I would also like to ask your help in locating a good implementation of PASCAL for a IBM 370 machine. I understand there are many such implementations and my question for you is which is best for a student environment. I plan to use PASCAL in a beginning computer science class and so I would like a version that is easy to use and one that has clear error messages." (* 77/6/30 *)

Jim Elam, 150 Lombard, No. 601, San Francisco, CA 94111: "I would be interested in information on usage in a production environment and efficiency of generated code on 370 gear?" (* 77/6/2 *)

Gary Feierbach, Advanced Studies Dept., Inst. for Advanced Computation, P.O. Box 9071, Sunnyvale, CA 94086: "We currently have Pascal upon our KI-10 and plan to put it up on several other machines including a version on the ILLIAC IV." (* 77/6/24 *)

Charles N. Fisher, Academic Computing Center, Univ. of Wisconsin, 1210 West Dayton Street, Madison, WI 53706: "We may have a proposal for PL/1 - like varying length strings for you in the next few months - it appears to extend PASCAL fixed length strings rather nicely. Also, I'll be in Minneapolis for a Univac User's Meeting in mid-October. If its convenient, I may be able to stop by and talk some PASCAL with you (I'll be heading a PASCAL "birds of a feather" session at the meeting). (* 77/8/30 *)

Dan Fylstra, 22 Weitz St. C, Boston, MA 02134 (* To put this letter in context: Dan is an editor/consultant for Byte *): "Initially I plan to write an article explaining the

features and strengths of Pascal, aimed at the BASIC-oriented beginning programmer or casual user. But I'll certainly include notes on the status of Pascal implementations and especially their availability on micros (since the news is so good).

"You can invite people to write or call me if they have late-breaking news that deserves a wider audience than the User's Group itself. Since everyone connected with Byte is enthusiastic about Pascal, articles, new product announcements, and material for "Byte's Bits" or the "Technical Forum" are always welcome. These should be sent to Byte's regular address in Peterborough." (* 77/8/22 *)

Richard Gemeinhardt, Jr., Discipledata, Inc., 110 S. Downey, Indianapolis, IN 46219: "Please advise if Pascal operates on any NCR hardware--such as NCR Century 201 or NCR Criterion." (* 4/25/77 *)

James D. George, Computer Branch, Underwater Sound Reference Division, Naval Research Laboratory, P. O. Box 8337, Orlando, FL 32806: "The Naval Research Laboratory has several PDP-11s, and is using RSX11M and RSX11D. I would be very much interested in finding out more about PASCAL under RSX11, and would appreciate any leads you could provide." (* 77/5/17 *)

Roger Gulbranson, Dept. of Physics, Univ. of Illinois, Urbana, IL 61801: "Even though I know you don't like it, you can add my name to the list of people who want an OTHERWISE (or whatever) clause added to the CASE statement. I particularly liked George Richmond's article. I'm not sure I agree with all the things he said, but most of his points seem reasonable. I'm not sure I agree with his point about partial L->R evaluation of boolean expressions. While I'll admit it will help some problems concerning array indexes and the like I'm finding out that the FTN (* CDC FORTRAN *) method of logical if evaluation (i.e., convert the whole mess into a logical (or boolean) result) and subsequent jump on true/false is faster on machines like the [Cyber] 175 and probably also the 76. Considering the trend toward faster hardware, it may not be a good idea to explicitly demand partial evaluation.

* * *

"I agree with Legenhausen's comment about pushing PASCAL in the appropriate micro computer journals. Maybe the way to do it is to develop a standalone PASCAL compiler for a paper tape based system with no more memory than 8K (16K if you must) and then distribute it for a nominal fee--say \$10 or \$15. And no, I don't have the time to do it." (* 77/6/6 *)

George E. Haynan, 556 Parker Rd., W. Melbourne, FL 32901: "Many maintainers who arbitrarily change Pascal at their sites are guilty of the NIH (Not Invented Here) syndrome: 'If I haven't thought of it then it isn't any good.' "I'm interested in Sequential Pascal, directly compilable, for the PDP-11, with an RT-11/RSX-11 operating system." (* 77/5/25 *)

Carl Helmers, BYTE Publications, 70 Main St., Peterborough NH 03458: "A couple of comments about the Zilog rumor. All the information came from the same source and later proved premature. At the IEEE Computer Society Asilomar conference this year, a Zilog representative could not confirm Pascal as a programming model for advanced architectures, but hinted strongly that research in the direction of instruction sets optimized for high level languages such as Pascal is being performed. A talk in the lobby of the West Coast Computer Faire's convention hotel with one of Motorola's LSI designers strongly hinted of the possibility of built in microcode for language constructs in the next generation of integrated circuits.

A strong suggestion: people involved with the implementation of languages should seek out LSI design engineers in order to inject ideas about appropriate features to be built into the designs of future microprocessor products." (* 77/6/20 *)

Richard Hendrickson, Cray Research Inc., 7850 Metro Parkway, Suite 213, Minneapolis, MN 55420: "Keep up good work. Articles like the one by Barron and Mullins in No. 7 will do wonderful job of keeping FORTRAN and eliminating PASCAL as major computing language." (* 77/5/23 *)

Sam Hills, 3514 Louisiana Ave. Pkwy., New Orleans, LA 70125: "I am interested in developing a subset of PASCAL to run on a hobby-type microcomputer such as the Altair

or IMSAI, and any information you could supply would be greatly appreciated." (* 77/6/5 *)

Tao-Yang Hsieh, VIDAR, 77 Ortega Ave., Mountain View, CA 94040: "I am considering implementing Pascal on our HP2100 system and would appreciate very much if you could assist me in obtaining a copy of Pascal P-code compiler and a copy of Pascal compiler written in Pascal." (* 77/8/1 *)

Jon F. Hueras, Dept. of Information and Comp. Sci., Univ. of Calif., Irvine, CA 92717: "I'm . . . working for Univac on the side. . . . We would find life a whole lot easier if we had a reasonable file comparison program to work with. You wouldn't happen to know of anyone who's written one in Pascal, would you? Please let us know." (* 77/7/26 *)

Alfred J. Hulbert, Inhalation Toxicology Res. Inst., P.O. Box 5890, Albuquerque, NM 87115: "We are working with John Barr of Hughes Aircraft to get Brian Lucas' NBS PASCAL written in PASCAL for RSX-11 users of DEC PDP-11's (along with real time and character string extensions)" (* 77/6/22 *)

Geoffrey Hunter, Chemistry Dept., York Univ., Downsview M3J 1P3, Ontario, Canada: "Thanks for your memo of 77/05/24. I am of course familiar with Pascal and actually taught a course one year using Wirth's book "Systematic Programming: an Introduction." I used "Algol" rather than PASCAL, Simula, Algol 68, etc. for the Waterloo talk, because it is, as you note, the ancestor of all current structured programming languages.

On first acquaintance I was an enthusiast for PASCAL, but after some practical experience, and after reading Habermann's article in Acta Informatica Vol. 3 (1973) p. 47., I have some reservations about some features of the language. Especially the lack of block structure (environment structuring--as distinct from control structures and procedures in particular), and the lack of dynamically dimensioned arrays, are, it seems to me conceptually oversights of the language. PASCAL's strong point is, of course, data structuring.

* * *

There is a danger with any organisation such as PUG--that it becomes the defendant of a fixed particular definition and implementation of the language. Guard against this. . . ." (* 77/6/1 *)

Aron K. Insinga, 126 Dupont Hall, University of Delaware, Newark, DE 19711: "We are interested in using Pascal under UNIX (and DEC-supported operating systems) as well as on micro-processors (the LSI-11, Motorola M6800, and Intel 8080, in particular) with compilation and assembly done on the larger PDP-11 system." (* 77/7/29 *)

Mitch Jolson, SSRFC, 25 Blegen Hall, Univ. of MN, Minneapolis, MN 55455: "It may interest PUG members to know that the LEAA (Law Enforcement Assistance Administration), a division of the Justice Department, requires, by legally enforceable regulation, that all criminal justice software be in ANSI FORTRAN or ANSI COBOL." (* 77/8/18 *)

Matti Karinen, and Jyrki Tuomi, Compiler Project, Room 2113, Computer Center, Tampere Univ. of Technology, PL 527, 33101 Tampere 10, Finland: "We would appreciate information about PUG and the Pascal Newsletter, especially as we have in mind to implement Pascal on our PDP 11/70." (* 77/8/17 *)

Barbara I. Karkutt, Box 942, Easton, PA 18042: "Am interested in the Pascal compiler for the Z-80 microcomputer." (* 77/6/6 *)

Doug Kaye, DuArt Film Labs Inc., 245 W. 55th Street, New York, NY 10019: "I anxiously await Newsletter #9 with writeups about PASCAL on Data General gear." (* 77/7/21 *)

Ed Keith, Citrus College, 18824 E. Foothill Blvd., Azusa, CA 91702: "Please send data on availability of compilers, assemblers etc. I have a XEROX 560, IMSAI 8080, SWTPC 6800." (* 77/4/28 *)

Thomas J. Kelly, Jr.: 120 East Street Road, C3-9, Warminster, PA 18974: "I am interested in obtaining a Pascal compiler for any Burroughs computer; especially for the B5500, B6700, or B7700." (* 77/5/16 *)

Here and There With Pascal

Peter Klauber, c/o Hamburgische Electricitaets-Werke, Ueberseering 12, D-2000 Hamburg 60, Germany: "My intention to use PASCAL, is to introduce the philosophy of structured programming to out commercial COBOL-programmers. For this reason the PASCAL must be able to communicate with normal IBM datasets.
"My question to you is: Do you know a working PASCAL compiler for our IBM 370/158 SVS?" (*77/6/16*)

Jerry LeVan, Dept. of Math. Sciences, Eastern Kentucky Univ., Richmond, KY 40475: "I would like to know if anybody has PASCAL running under RSTS/E on a PDP 11/70 (or 45 etc.)" (*77/5/2*)

Donald Lindsay, Dynalogic Corporation Ltd., 141 Bentley Ave., Ottawa, Ontario, Canada K2E 6T7: "I am interested in M6800 Pascal. I have an incomplete implementation of Brinch Hansen's Sequential Pascal. Due to the press of other work, I would be just as happy to purchase a compiler. (It would have to be commercially viable.)" (*77/6/22*)

David Lippincott, Information Control Systems, 313 N. First Street, Ann Arbor, Michigan 48107: "We are a computer typesetting firm upgrading to an as yet unknown machine. We will be writing an operating system so any information of similar applications would facilitate my attempts at convincing others that Pascal would be a good choice." (*77/7/23*)

R. A. Lovestedt, 20427 SE 192, Renton, WA, 98055: "Will soon be starting a P4 interpreter on HP3000." (*77/5/24*)

Tim L. Lowery, Applications Prog. Group, 110 Love Building, Computing Center, Florida State Univ., Tallahassee, FL 32306: "We are very interested in acquiring a Pascal implementation for 8080 development, since Pascal is the favorite and dominant language among the computer science students." (* From a letter to PUG member Peter Zechmeister, 77/7/20*)

Bruce Mackenzie, Computervision Corporation, 201 Burlington Road, Route 62, Bedford, MA 01730: "We will be implementing PASCAL-P4 on Data General NOVA's and NOVA compatible machines, running under our own operating system. We will also be using Zilog's Z80 in the near future, PASCAL has been mentioned for it. Do you know of anyone planning to implement PASCAL for the Z80?
"I found a little bit of information for you: Ted Park of Loma Linda, California has a PCODE interpreter and assembler written in (Data General) ECLIPSE assembly language and running under RDOS. It took them about a month of work. Ted said he would write you directly." (*77/8/9*)

Ian MacMillan, P.O. Box 128, Mount Royal, Quebec, Canada H3N 2T6: "We are running Pascal under NOS (* CDC 6000 operating system *). How do you get that interactive?" (*77/4/28*)

Mark T. Marshall, 18229 Topham St., Reseda, CA 91335: "I am going to be using the COMPUTER AUTOMATION LSI 490." (*77/8/29*)

Jim McCord, Systemetrics Inc., 120 E. de la Guerra Street, Santa Barbara, CA 93101: "I'm a hobbyist with an LSI-11 (PDP-11-03) with dual floppies. If anybody knows of a version of Pascal that will run on this machine, I'd like to hear about it, (especially if it's cheap). (*77/9/7*)

Brian Meekings, Dept. of Computer Studies, Univ. of Lancaster, Bailrigg, Lancaster, England, UK LA1 4YX: "I took advantage of the fact that we have an enthusiastic Pascal faction here to collect some subscriptions. (* NINE were enclosed. *) Incidentally, is there a student subscription rate--some of our undergraduates may well be interested." (* There isn't, but where else can a student get a student rate that is much cheaper? *) (*77/5/18*)

C. A. Miller, Nuclear Research Centre, Dept. of Physics, Univ. of Alberta, Edmonton, Alberta, T6G 2N5, Canada: "Our computing equipment giving rise to my interest in PASCAL consists of three DATA GENERAL Eclipses." (*77/6/8*)

David Miller, 11203A Avalanche Way, Columbia, MD 21044: "Please sign me up for the PASCAL User's Group. I've been so busy developing PASCAL (relocatable, for DEC 11/45)

and an application system, I failed to notice the Group has grown so much. Finally got to reading some SIGPLAN notices, and ran across your letter." (*77/5/22*)

Carlton Mills, 203 North Gregory, Urbana, IL 61801: "We are working on Pascal compiler for micro-processors. It is a highly optimized cross compiler running on the B6700 (Burroughs). Currently I am looking for venture capital to get it on the market. I will let you have more details when we are ready to announce it." (*77/8/22*)

J. Misra, Dept. of Computer Sciences, Painter Hall 3.28, Univ. of Texas at Austin, Austin, TX 78712: "I would appreciate receiving any information about Pascal implementation on NOVA computers.
"Our department has recently acquired two NOVA's for which we wish to get the compilers. The size of P-compiler would probably make it prohibitive for the NOVA's. If you know of any existing implementation, please send us the information." (*77/8/29*)

Tom Moberg, Academic Computing, Grinnell College, Grinnell, IA 50112: "We are looking for a PASCAL system which will run on our PDP 11/70 (RSTS/E)." (*77/6/7*)

Gerald Nadler, RBMS Research Center, Brandeis Univ., Waltham, MA 02154: ". . . I was hoping that a list was a available of Pascal implementations on machines other than CDC and PDP-10's." (*77/8/18*)

Brian Nelson, Computer Services, 2801 W. Bancroft Street, U. of Toledo, Toledo, OH 43606: "I am trying to locate a Pascal compiler for use on a PDP 11/70 and a PDP 11/40." (*77/6/2*)

John W. Nunnally, Harding College, Box 744, Searcy, AR 72142: "Harding College has just ordered a PASCAL compiler from Oregon Museum of Science and Industry (OMSI). It is a modified version of ESI's implementation that is supposed to run under RSTS/E Version 6B (with the RT-11 emulator). We will let you know how it goes." (*77/5/23*)

Carol Anne Ordin, Software Technique, Inc., 100 Pomander Walk, Alexandria, VA 22314: "I am preparing some material for publication on PASCAL for micros in my capacity as Consulting Editor of Mini-Micro Systems and EDN." (* From a note to PUG member Peter Zechmeister, 77/6/15. *)

Shmuel Peleg, Computer Science Center, University of Maryland, College Park, MD 20742: "Do you know of any PASCAL compilers working under UNIX?" (*77/8/28*)

Lee Potts, DARCOM ALMSA, Attn.: DRXAL-TL, P.O. Box 1578, St. Louis, MO, 63188: "My agency is planning to try Pascal as a systems implementation language on IBM 360 and several minicomputers of varying architecture. Pascal's main attraction to us now is systems portability." (*77/9/1*)

Walter F. Frautsch, Albertinenestrasse 29, D-1000 Berlin 37, Germany: "I would like to mention that I am working in the field of system-simulation (methodology, applications in the field of urban and regional planning). If you know any people using PASCAL for the development of simulation-systems (event-oriented as well as continuous), please let me know their addresses." (*77/6/10*)

Bruce K. Ray, Polymorphic Computer Systems, P. O. Box 3581, Boulder, CO 80303: "I am interested in developing a PASCAL compiler for use with the NOVA-series computer, and am therefore interested in anything and everything which may help me in the task. Is there a PASCAL written in a mini-PASCAL (subset) which is available which would be easier to bootstrap, and if so, who, how, where, and how much." (*77/8/16*)

Harlan R. Ribnik, P.O. Box 3182, Boulder, CO 80307: "I am a graduate student in Computer Science at the University of Colorado working on an implementation of a PASCAL to JANUS compiler. I was informed by someone I met on the CDC PLATO system that I might be able to get some information from you regarding the PASCAL Users' Group." (*77/8/19*)

Bo Roider, AB Atomenergi, Fack, 611 01 Nykoping 1, Sweden: "AB Atomenergi is a research and development center for nuclear and other energy forms. At our data center we have a CDC CYBER 172 with 131 K memory, and NOS 1.2 operating system. We plan to install Pascal on it and hereby apply for membership in Pascal User's Group, as individuals or as an organization, whichever the policy of PUG is." (*77/8/22*)

Peter Rouschmayer, Luitpold-Gymnasium, Seeaustrasse 1, D-8000 Munchen, Germany: "We got: A PDP 11/34 with 64 kWords Core, 2 Disks RK05, a LA180 Lineprinter and 7 VT50 screens. RSTS/E Release 6B, BASIC+.

"We ought to: teach Informatics to our pupils aged 10 to 20.
 "We would like to get: a PASCAL-Compiler, interactive if possible, running in RSTS if possible.
 "Can you help us?" (* 77/4/2 *)

Bernie Rosman, Math/CS Dept., Framingham State College, Framingham, MA 01701: "I'm trying to get (CDC 6000) Pascal 2 for Mass. State College Computer Network (Cyber 72,73). Currently, we have Pascal-Release 1 update 11 which has some bugs; e.g., SQRT doesn't work (fixed by MSCQN). Also: we're now using Pascal in data structures and CS II (2nd semester-freshman) courses. We have, however, not yet switched to Pascal in CS I. Finally, we hope to install Pascal on our new PDP-11/34." (* 77/5/31 *)

David J. Rypka, Dept. of Computer and Info. Science, 2036 Neil Ave. Mall, Columbus, Ohio 43210: "I am an active user of a DEC-10 version and would like to find other versions and documentation for the DEC-10." (* 77/14/6 *)

Carlos Scheel, Depto de Sistemas, Instituto Tecnologico de Monterrey, Sucursal J, Monterrey, Mexico: "We would like to have the compiler of the PASCAL system; please mail me back all the information and prices, manuals, etc." (* 77/8/8 *)

Barry Searle, TowerC Floor 10C, Transport Canada, Section TASX, Place de Ville, Ottawa, Ontario K1A 0N8, Canada: "The Canadian Dept. of Transport will be converting to Pascal on PDP-11 equipment." (* 77/8/25 *)

David Segal, 111 Third Ave. BK, New York, NY 10003: "I am planning to get a microcomputer and would like to implement something more useful than BASIC for it to think in. I first heard about Pascal while trying to track down information on another decent language, BCPL. In my BCPL search I talked to Art Evans and Bob Morgan at Bolt, Beranek and Newman in Cambridge, Mass. From them I gathered that BCPL compilers aren't so easy to come by on small machines, but that Pascal is implemented on several PDP-11's. That was heartening since the microcomputer I'm most interested in is a PDP-11 look-alike with respect to instruction set. . . . If you happen to know of any already existing Pascal implementations on a microcomputer, or anybody working on one, please let me know about it." (* 77/8/18 *)

Bruce Seiler, UCLA Dept. of Chemistry, Los Angeles, CA 90024: "I am interested in the implementation of PASCAL on microprocessor based systems." (* 77/5/23 *)

Michael Settle, 751 Washington, No. 115, Arlington, TX 76011: "I have a confession to make--I don't have any idea what PASCAL is. I work with the huge Insane Business Monsters and tinker with my own Altair. There has been so much discussion of PASCAL in Dr. Dobb's Journal during the past year, that I finally broke down and wrote you. Please enter a subscription to your newsletter for me, and send me the details about your PUG." (* 77/8/15 *)

David Elliot Shaw, Structured Systems Corp., 343 Second St. - Suite K, Los Altos, CA 94022: "You are performing a welcome service for the community of Pascal users, implementors, fans. . . . On the accompanying sheet we describe (as compactly as possible) the STRUCTURED SYSTEMS PASCAL-SS compiler for the PDP-11." (* 77/7/12 *)

Jeffrey G. Shaw, P.O. Box 2678, Menlo Park, CA 94025: "Could you direct me to an individual or group that might have a Pascal compiler for the 8080 or 280 micros?" (* 77/8/18 *)

Evan L. Solley, The Life Support Systems Group, Ltd., 2432 NW Johnson, Portland, OR 97210: ". . . Also enclosed is a write-up and sample listing for a PASCAL cross-referencer we developed some time ago. It is an extension of Wirth's PCREF, which we find much more usable. Its symbol tables are currently set up to process ESI Pascal (V5.5) for RT-11, but can be easily modified for use with other compilers.
 "The program is licensed and distributed in ASCII source form for a fee of \$25.00. Distributable media include magtape (9 track 800 bpi), DECTape, RK05 cartridge, or card deck (800 cards). Media should be provided by Licensees. RT-11 users will additionally

receive a special executable version, with CSI and CCL interface to version 3 of RT-11 and LSSG's RT-11K extension of version 2C." (* 77/4/23 *)

Tom Spurrier, Electronics Systems Division, Harris Corp., P.O. Box 37, Melbourne, FL 32901: "Harris Corp. headquarters has issued a corporate directive that Pascal is our language. There are over 100 computer centers in the corporation. It will be used for systems level development initially and then in applications areas." (* 77/6/21 *)

John P. Stallings, Tymshare, Corporate Offices, 20705 Valley Green Drive, Cupertino, CA 95014: "Once again I find myself potentially involved in a project concerning Pascal and have decided that it is past time for me to associate myself with an appropriate source of information.
 "Could you tell me how to go about joining the Pascal User's Group, and if possible, how to obtain a list of available Pascal compilers for the PDP-11?" (* 77/7/18 *)

Rod Steel, MS 60-456, Tektronix Inc., P.O. Box 500, Beaverton, OR 97077: "I have a partially debugged version of Mike Ball and Co.'s Concurrent Pascal cross-compiler for the Interdata 7/16 running on our DEC K110 (translated from Sequential Pascal to the lower case version of PASREL)." (* 77/5/31 *)

W. Richard Stevens, Kitt Peak National Observatory, P.O. Box 26732, Tucson, AZ 85726: (* What follows is extracted from an article Richard wrote for the Kitt Peak Computing Newsletter *) "The PASCAL language, because of features designed into it, has the ability to detect programming errors that would be undetected by any FORTRAN system. I have personally found that this feature alone cuts in half the time needed to develop a new program." (* 77/1/3 - The article mentions other features of PASCAL which make it useful at Kitt Peak. *)

Peter Sumner, Interdata Computers Pty. Ltd., 30 Kings Park Rd., West Perth, Western Australia 6005: "I was delighted to discover the existence of your User's Group as there are a number of interested Interdata customers in Australia. In fact, a Pascal compiler is currently under development at the University of Melbourne, Dept. of Computer Science." (* 77/5/3 *)

Markku Suni, Computer Centre, Univ. of Turku, SF-20500 Turku 50, Finland: "Since I am interested in Pascal and have spent some nice hours kitbashing our Pascal compiler, I would like to join in. . . . We have here a PDP-11 with KA processor, 128Kw of core, 2 RPO3 discs, one TUIO mag tape unit, card reader, line printer, and usual sortiment of terminals." (* 77/4/28 *)

Rodney Thayer, Central Research Group, P.O. Box 451, Harvard, MA 01451: "A few people in my area (myself included) are investigating R. E. Berry's U. of Lancaster PASCAL for the Data General NOVA. If I am closer than England for somebody, they are welcome to write to me to find out about Lancaster PASCAL." (* 77/7/7 *)

Mike Tiller, 2501 N. Lancaster Ln. No. 178, Plymouth, MN 55441: "Interested in Pascal for NOVA/ECLIPSE." (* 77/7/14 *)

Martin Tuori, Behavioral Sci. Div., Defence and Civil Inst. of Environmental Medicine, P.O. Box 2000, Downsview, Ontario, M3M 3B9, Canada: "We will be running ESI Pascal under RSX11M, as soon as ESI has it ready." (* 77/7/26 *)

Univ. of Texas at Austin: (* The statistics from their newsletter indicate that Pascal and Pascal 2 accounted for 5% of their total use in March 1977. *)

James A. Vellenga, System Development, Data 100 Corp., Box 1222, Minneapolis, MN 55440: (* He reports that there is a class in Pascal at Data 100. Ten to fifteen people were enrolled. Nine memberships came from people at the company. *)

Kenneth R. Wadland, Computer Science Dept., Fitchburg State College, Fitchburg, MA 01420: "Although I have not used PASCAL much, I have become quite interested in it from talking to Professor Bergeron of the University of New Hampshire. (He has been modifying a DEC System-10 compiler written in Germany.)
 "I intend to teach PASCAL in my Data Structures course and later in my Systems Programming course on a CDC Cyber 72. As a teaching device, I think it is far superior to any of the other standard languages." (* 77/6/29 *)

Walter Wehinger, Pfaffenwaldring 64, Rechenzentrum Uni Stuttgart, D-7000 Stuttgart 80, Germany: "We are running PASCAL 6000.3.4 modified by T. A. Nemeth Uni Adelaide, so we have only minor INTERCOM problems (e.g., EOL-definition). We switched over to NOS/BE 1.0 L.420 without problems."

David H. Welch, P.O. Box 721, Colton, CA 92324: "In the August issue of 'Microcomputer SCCS Interface' the existence of your group, its quarterly newsletter, and dues of \$4.00/yr were mentioned. I'm interested in learning more about Pascal and I think your newsletter might be useful." (* 77/9/2 *)

Richard West, Small Terminal Engineering, Comterm Ltd., 147 Hymus Blvd., Montreal 730, Quebec, Canada: Our software team has decided to change over to using PASCAL to write our systems packages. . . . I would like to have copies of . . . back issues so that we can find the most economical way of obtaining PASCAL for our PDP-11 DOS system and for a variety of microprocessors." (* 77/6/20 *)

Hans-Wilm Wipperman, Univ. of Kaiserslautern, Pfaffeuberstr. 95, D-6750 Kaiserslautern, Germany: "German Chapter of ACM is planning a meeting concerned with PASCAL. . . . I shall inform you about details later on." (* 77/5/20 - See the Conferences section for details of the 77/10/14 meeting. *)

Louis F. Wojnarowski, Mental Health Research Institute, University of Michigan, Ann Arbor, MI 48109: "I am interested in implementing Pascal on my Prime-300. I would like to get more information on the hypothetical stack machine code (Pascal-P I believe) and any macro generating systems before I attempt to order a particular tape from PUG." (* 77/6/27 *)

Joan Zimmerman, MUMPS Users' Group, Biomedical Computer Laboratory, 700 South Euclid, St. Louis, MO 63110: "I have never heard of any other group obsessed with a single language apart from ours: we are all involved with MUMPS as described in the enclosed Pocket Guide (additional copies \$1) and Book of MUMPS (additional copies \$2). "We have about 250 paying members (\$25 annual fee), but about 5000 people on our mailing list. A member has asked me to find out for him if anyone has written MUMPS in PASCAL. If you know of anyone who has, or could query your members about this, I would appreciate any positive information." (* 77/8/22 *)

Karl L. Zinn, Center for Research on Learning and Teaching, University of Michigan, 109 East Madison Street, Ann Arbor, MI 48109: "I am working on uses of PASCAL in personal computing as well as in intro courses." (* 77/8/15 *)

CONFERENCES

German Chapter of the ACM, a meeting on Pascal.
 (* This is rather late notice, but we'll hope that interested members will at least be able to attend the conference, if not submit papers. *) Meeting October 14, 1977 in Kaiserslautern. Papers will include such subjects as "Implementations," "Pascal in Schools," "Applications," and "Pascal and Microcomputers." For more information get in contact with G. Nees, German Chapter of the ACM, c/o Siemens AG, E 54, Mozartstr. 33/b, D-8520 Erlangen, Germany; or H.-W. Wippermann, Universitat Kaiserslautern, Informatik, Pfaffenbergstr., Gebaude 14, D-6750 Kaiserslautern, Germany. (* Our thanks to Hans-Wilm Wippermann for keeping us informed about the conference. We hope to have a report from the conference in No. 11. *)

Pascal Day or Pascal Workshop, McMaster Univ., Hamilton, Ontario, Canada.
 (* From a letter from Nick Solntseff *) "I am starting to plan a 'Pascal Day' or a 'Pascal Workshop' to be held at McMaster on March 3, 1978. I will be getting in touch with the Regional ACM group and the IEEE Computer Society, to see if they want to sponsor it. I am thinking of asking for brief reports on implementations, use of Pascal for teaching, etc." (* For more information, write to Nick Solntseff, Dept. of Applied Mathematics, 1280 Main St. West, Hamilton, Ontario, Canada L8S 4K1; or call (416) 525-9140. *)

Report on IFIP conference, Aug. 8-12, 1977, Toronto.
 (* Thanks for this report to Nick Solntseff *) "I did not have too much interest shown at IFIP in a meeting of PUG, but I am not really surprised as it was almost impossible to get in touch even with people one knew were at the conference.
 "The computerized message system was terrible to say the least, but anyone interested should have seen my manual notice on the general notice board.
 "In all, I gathered nine people over coffee in the hospitality lounge at various times, but decided that a more formal meeting was not called for."

Meeting of the Pascal sub-group, AFCET, Nice, France, June 13-14, 1977.
 (* PUG member Olivier Lecarme, IMAN, University of Nice, Parc Valrose, F-06034 - Nice CEDEX, France, has sent us a bulletin, which he publishes regularly before meetings of the sub-group, of articles to serve as a basis of discussion for the meeting of the sub-group. We'll try to get word to you in advance of the next meeting, but in the meantime, if you wish to receive the bulletin and/or be notified of meetings, write to Olivier Lecarme. *)
 Titles of Articles:
 "The language Pascal as support for teaching introductory programming," R. Rousseau.
 "The future of Pascal (extensions and standardization)," Andy Mickel.
 "Some tools for users of Pascal at Rennes," l'equipe Simone.
 "Simulator of machines in Pascal," D. Thalmann.
 "Pascal/CII-Iris 80 and 10070," P. Maurice.
 "Application of parallel algorithms to three simple problems," J. Bezivin, J. L. Nebut, and R. Rannou.
 "One year of using the language Simone at Rennes: Judgment and perspectives," J. Bezivin, J. L. Nebut, and R. Rannou.

BOOKS AND ARTICLES

We've had no news from David Barron. Rich Stevens supplied us with one item. George Richmond's bibliography, which we didn't have room for in No. 8, appears separately. A price list for some formerly out-of-print documentation appears under IMPLEMENTATIONS

LANGUAGES

Brinch Hansen, Per, The Architecture of Concurrent Programs, Englewood Cliffs, NJ: August 1977, 366 pp., \$16.95. (Prentice Hall)
 (* From the publisher's blurb *) ". . . detailed handbook showing you how to develop simple and reliable operating systems from scratch using Concurrent Pascal."

"Proceedings of the All-Union Symposium on Implementation Techniques for New Programming Languages," Novosibirsk 1975, English translation published by Springer-Verlag as Volume 47 of their Lecture Notes in Computer Science. (* PUG member Arthur Brown, who had offered to abstract the Russian, sent us news of the English translation in lieu of the abstract. We'll try to get more information for No. 11.

TEXTBOOKS

(* A Summary of all known Pascal textbooks, partly reprinted from newsletters 5-8 *)
 Atwood, J. W., Standard Pascal, to be published. (* Note: we haven't heard anything new about this book. For more information, write to J. W. Atwood, Dept. of Comp. Sci., Sir George Williams Campus, Concordia Univ., Montreal, Quebec, Canada H3G 1M8. *)

Conway, Richard C., David Gries, and E. C. Zimmerman, A Primer on Pascal, Winthrop, 1976, 448 pp., paper, \$9.95.
 An introduction to Pascal for non-programmers which in spite of its length fails to cover any data structures besides arrays. A rewrite of a book based on PL/C which still carries the smell of PL/I--a foreward stating the contrary notwithstanding.

Bowles, Ken (U. of Calif., San Diego), Introduction to Computer Science, to be published by Springer-Verlag in October 1977.

A complete introduction to Pascal for non-programmers using an interactive graphics approach and the Keller teaching method.

Kiebertz, Richard, Structured Programming and Problem Solving with Pascal, to be published by Prentice-Hall sometime in 1977. For more information, write Richard Kiebertz, Dept. of Comp. Sci., SUNY at Stony Brook, Stony Brook, NY 11794.

A rewrite of a book by the same name on PL/I.

Schneider, G. Michael, Steven W. Weingart, and David M. Perlman, Introduction to Programming and Problem Solving with PASCAL, New York: Wiley, to be published in January 1978. A camera-ready copy of the manuscript can be obtained by writing Gene Davenport, Editor, John Wiley and Sons Publishers, 605 Third Avenue, New York, NY 10016. The manuscript may, with written permission, be duplicated for class use until the publication date.

A complete introduction to Pascal for computer science majors.

Webster, C.A.G., Introduction to Pascal, Heyden, 1976. \$11.00, 5.50, DM35.00.

A book for beginning computer science majors which received a bad review in Pascal Newsletter No. 8 because, among other things, there are numerous errors and the old language definition was used.

Wirth, Niklaus, Systematic Programming: An Introduction, Englewood Cliffs, NJ: Prentice Hall, 1973, 169 pp., \$13.96.

(* From the preface *) "A book which introduces programming as the art or technique of formulating algorithms in a systematic manner, recognizing that it is a discipline in its own right." (* This introductory book only covers Pascal through arrays *)

Wirth, Niklaus, Algorithms + Data Structures = Programs, Englewood Cliffs, NJ: Prentice Hall, 1976, 366 pp., \$16.50.

(* From the cover *) ". . . lucid, systematic, and penetrating treatment of basic and dynamic data structures, sorting, recursive algorithms, language structures, and compilers."

IMPLEMENTATIONS

Price List on Reports of Interest--hard-to-get implementation information:

Through the courtesy of George H. Richmond and his co-workers Karin Bruce and Michele Dowd, reprints of some hard-to-get Pascal documentation is now available. Write to:

Karin and Michele--Pascal Distribution
 Computing Center Library: 3645 Marine St.
 Univ. of Colorado,
 Boulder, CO 80309
 or call (303) 492-8131.

(* These all can be ordered from North America at the price listed. All others must include overseas postage. *)

"Pascal-S, A Subset and its Implementation," 63 pages, N. Wirth, ETH, June 1975, \$6.50.

(* Includes an entire listing of a Pascal-S compiler/interpreter in Pascal. *)

"On Code Generation in a Pascal Compiler," 42 pages, U. Ammann, ETH, April 1976, \$4.00.

(* Description of the internal design and performance of Pascal-6000 *)

"The Pascal-P Compiler Implementation Notes," 65 pages, ETH, December 1974, revised July 1976 by K. V. Nori, et. al., \$5.50.

(* Describes the portable Pascal compiler and interpreter. *)

(* Letter received from David Barron - 7/7/75 *)

"I am sorry I have not been able to write earlier with news of the publication of the Proceedings of the Pascal Symposium. We had hoped that these would appear in the Springer-Verlag 'Lecture Notes in Computer Science,' but after an initial favourable reaction Springer delayed, and have finally declined to publish. However, I am pleased to be able to report that Wiley-Interscience have agreed in principle to publish the proceedings. I am currently discussing details with them, and hope to be able to give you firm details very shortly."

APPLICATIONS

Barth, Jeffrey M., "Shifting Garbage Collection to Compile Time," CACM, 20:7 (July 1977), pp. 513-519.

Algorithms expressed in Pascal.

Biedl, Albrecht, "An Extension of Programming Languages for Numerical Computation in Science and Engineering with Special Reference to Pascal," SIGPLAN Notices, 12:4 (April 1977), pp. 31-33.

A description of how to carry attributes of computation such as temperature, energy, fuel consumption, etc., and units expressing these attributes such as celsius, kelvin, joules, liters per km with numerical quantities used in scientific and engineering problems. This circumvents problems which arise in dealing only with pure (dimension-less) real numbers in current programming languages.

Brownlee, J. Nevil, "An ALGOL-Based Implementation of SNOBOL4 Patterns," CACM, 20:7 (July 1977), pp. 527-529.

Algorithms expressed in Pascal.

Bulman, David M., "Stack Computers," IEEE's Computer, May 1977.

Suggests that new machines introduced by semiconductor manufacturers may be called 'Pascal machines' instead of stack machines because the Pascal compiler generates code for a 'hypothetical stack machine' and manufacturers may start building machines, using LSI technology, like the hypothetical one.

Gries, David, and Narain Gehani, "Some Ideas on Data Types in High Level Languages," CACM, 20:6 (June 1977), pp. 414-420.

Algorithms expressed in Pascal.

Hueras, Jon, and Henry Ledgard, "An Automatic Formatting Programming for Pascal," SIGPLAN Notices, 12:7 (July 1977), pp. 101-105.

A larger description of the pretty printer announced as available for distribution in Pascal Newsletter 6, page 70. (* This and the other article below from the July issue were drawn to our attention by PUG member Harry M. Murphy. *)

Leventhal, Lance A., "Talk Your Computer's Language," Kilobaud, August 1977, pp. 34-38.

Mentions Pascal as one high-level language used on small computers, and urges readers to be aware of it.

Peterson, James L., and Theodore A. Norman, "Buddy Systems," CACM, 20:6 (June 1977), pp. 421-431.

Algorithm in Pascal.

Singer, A, J. Hueras, and H. Ledgard, "A Basis for Executing Pascal Programmers," SIGPLAN Notices, 12:7 (July 1977), pp. 101-105.

A set of guidelines for standard naming, formatting and commenting conventions in Pascal programs and why programmers should adhere to them.

Surden, Esther, "Software Thievery Cited as Thorny Hobbyist Problem," Computer World, June 6, 1977.

A report on the National Computer Conference, which lists Pascal as a programming language available on personal computers, but which says that there are few implementations of it so far.

Tennent, R. D., "Language Design Methods Based on Semantic Principles," to appear in Acta Informatica, 1977. (* Rich Stevens let us know about this one. *)

(* from the summary. *) "Two language design methods based on principles derived from the denotation approach to programming language semantics are described and illustrated by an application to the language Pascal. The principles are, firstly, the correspondence between parametric and declarative mechanisms, and secondly, a principle of abstraction for programming languages adapted from set theory. Several useful extensions and generalizations of Pascal emerge by applying these principles, including a solution to the array parameter problem, and a modularization facility."

BIBLIOGRAPHY

- Literature about the Programming Language Pascal January 1977
- George H. Richmond, University of Colorado Computing Center
- Ammann, U., "The Method of Structured Programming Applied to the Development of a Compiler", "International Computing Symposium 1973", Gunther, et al., Eds., pp. 93-99 North Holland (1974)
- Ammann, U., "Die Entwicklung eines Pascal-Compilers nach der Methode des strukturierten Programmierens, ETH-Diss. 5458 (1975)
- Ammann, U., "On Code Generation in a PASCAL Compiler", Berichte des Instituts für Informatik, Nr. 13, ETH Zurich (April 1976)
- Bachmann, K. H., "Die Programmiersprachen Pascal und Algol 68", Akademie-Verlag, Berlin (1976)
- Burger, W. F., "Pascal Manual", Department of Computer Sciences, TR-22, The University of Texas at Austin (July 1973)
- Eurger, W. F., "BOBSW - A Parser Generator", Department of Computer Sciences, SESL7R-7, The University of Texas at Austin (December 1974)
- Bron, C., de Vries, W., "A Pascal Compiler for PDP11 Minicomputers", Department of Electrical Engineering, Twente University of Technology, Enschede, Netherlands (1974); SOFTWARE-PRACTICE AND EXPERIENCE -6-, 1, pp. 109-118 (January 1976)
- Conway, R., Gries, D., Zimmerman, E., "A Primer on PASCAL", Winthrop Publishers, Inc., Cambridge, Massachusetts (1976)
- Desjardins, P., "A Pascal Compiler for the Xerox Sigma 8", SIGPLAN NOTICES -8-, 6, pp. 34-36 (1973)
- Deverill, R. S., Hartmann, A. C., "Interpretive PASCAL for the IBM 370", Information Science Technical Report No. 6, California Institute of Technology (1973)
- Felersisen, L., "Implementation of PASCAL on the PDP 11/45", DECUS Conference, Zurich, pp. 259 (September 1974)
- Findlay, W., "The Performance of Pascal Programs on the MULTUM", Report No. 6, Computing Department, University of Glasgow, Scotland (July 1974)
- Friesland, G., et al., "A Pascal Compiler Bootstrapped on a DEC-System 10", Lecture Notes in Computer Science -7-, pp. 101-113, Springer-Verlag (1974)
- Friesland, G., Sengler, M.-E., "Zur Übertragung von Compilern durch Selbstkompilation am Beispiel des PASCAL-Compilers", Institut für Informatik des Universität Hamburg, report IFI-HH-B-13/74 (December 1974)
- Grosse-Lindemann, C.-O., Lorenz, P.-W., Nagel, H.-H., Stini, P. J., "A PASCAL Compiler Bootstrapped on a DEC-System 10", Fachtagung über Programmiersprachen, pp. 101-113, Lecture Notes in Computer Science -3-, Springer-Verlag (1974)
- Grosse-Lindemann, C.-O., Nagel, H.-H., "Postlude to a Pascal-Compiler Bootstrap on a DEC System-10", Bericht Nr. 11, Institut für Informatik, Universität Hamburg, Germany (1974); SOFTWARE-PRACTICE AND EXPERIENCE -6-, 1, pp. 29-42 (January 1976)
- Habermann, A. N., "Critical Comments on the Programming Language Pascal", ACTA INFORMATICA -3-, 1, pp. 47-57 (1973)
- Hansen, P. B., "Operating System Principles", Prentice-Hall, Englewood Cliffs, New Jersey (1973)
- Hansen, P. B., "The Purpose of Concurrent Pascal", SIGPLAN NOTICES -10-, 6, pp. 305-309 (1975)
- Heistad, E., "Pascal - Cyber Version", Teknisk Notat S-305 Forsvarets Forskningsinstitutt, Norwegian Defense Research Establishment, Kjeller, Norway (June 1973)
- Mikita, T., Ishihata, K., "PASCAL 8000 REFERENCE MANUAL, Version 1-0", Technical Report 76-02, Department of Information Science, Faculty of Science, University of Tokyo (March 1976)
- Hoare, C. A. R., Wirth, N., "An Axiomatic Definition of the Programming Language Pascal", ACTA INFORMATICA -2-, 4, pp. 335-355 (1973)
- Illum, K., "En introduktion til programmeringsproget Pascal", Danmarks Ingeniørakademi, Aalborg (1973)
- Ishihata, K., Mikita, T., "Bootstrapping PASCAL Using a Trunk", Technical Report 76-04, Department of Information Science, Faculty of Science, University of Tokyo (March 1976)
- Jensen, K., Wirth, N., "Pascal User Manual and Report", Lecture Notes in Computer Science, -18-, Springer-Verlag, New York (1974); Springer Study Addition (1975)
- Knobe, B., Yuval, G., "Making a Compiler Indent", Computer Science Department, The Hebrew University of Jerusalem, Israel (November 1974)
- Kristensen, B. B., Madsen, D. L., Jensen, B. B., Eriksen, S. H., "A Short Description of a Translator Writing System (BOBS-System)", Daimi PB-11, University of Aarhus, Denmark (February 1973)
- Kristensen, B. B., Madsen, D. L., Jensen, B. B., "A Pascal Environment Machine (P-code)", Daimi PB-28, University of Aarhus, Denmark (April 1974)
- Kristensen, B. B., Madsen, D. L., Jensen, B. B., Eriksen, S. H., "User Manual for the BOBS-System", Unpublished English Version, University of Aarhus, Denmark (April 1974)
- Lecarme, D., "Le langage de programmation Pascal", Université de Montréal (1972)
- Lecarme, D., "Structured Programming, Programming Teaching, and the Language Pascal", SIGPLAN NOTICES -9-, 7, pp. 15-21 (July 1974)
- Lecarme, D., Desjardins, P., "Reply to a Paper by A. N. Habermann on the Programming Language Pascal", SIGPLAN NOTICES -9-, 10, pp. 21-27 (October 1974)
- Lecarme, D., Desjardins, P., "More Comments on the Programming Language Pascal", ACTA INFORMATICA -4-, pp. 231-243 (1975)
- MacLennan, B. J., "A Note on Dynamic Arrays in Pascal", SIGPLAN NOTICES -10-, 9, pp. 39-40 (September 1975)
- Mancel, P., Thibault, D., "Transport d'un compilateur PASCAL, Ecrit en PASCAL d'un CDC 6400 sur un CII IRIS 80", These de Docteur Ingenieur, Université Paris VI (1974)
- Mamier, E., "A Program Verifier for Pascal", Information Processing 74 (IFIP Congress 1974), North-Holland (1974)
- Mickel, A., "Pascal Newsletter", University of Minnesota Computer Center, Minneapolis; No. 5 (September 1976), No. 6 (November 1976) (see G. Richmond)
- Molster, T., Sundvor, V., "Unit Pascal System for the Univac 1108 Computer", Teknisk Notat 1/74, Institutt for Databehandling, Universitetet i Trondheim, Norway (February 1974)
- Nagel, H.-H., "Pascal for the DEC-System 10, Experiences and Further Plans", Mitteilung Nr. 21, Institut für Informatik, Universität Hamburg (November 1975)
- Nori, K. V., Ammann, U., Jensen, K., Nagel, H. H., "The Pascal(P) Compiler: Implementation Notes", No. 10, Berichte des Instituts für Informatik, Eidgenössische Technische Hochschule, Zurich (December 1974)
- Richmond, G., edit., "Pascal Newsletter", University of Colorado Computing Center, Boulder; No. 1 (January 1974), SIGPLAN NOTICES -9-, 3, pp. 21-28 (March 1974); No. 2 (May 1974), SIGPLAN NOTICES -9-, 11, pp. 11-17 (November 1974); No. 3 (February 1975), SIGPLAN NOTICES -11-, 2, pp. 33-48 (February 1976); No. 4 (July 1976) (see A. Mickel)
- Rowland, D., "Pascal for Systems", paper presented at DECUS (Digital Equipment Corporation User's Society) (December 1975)
- Saxena, A. R., Bredt, T. H., "A Structured Specification of a Hierarchical Operating System", SIGPLAN NOTICES -10-, 6, pp. 310-318 (June 1975)
- Schauer, H., "PASCAL fuer Angaenger", Oldenbourg-Verlag, Wien, Muenchen (1976)
- Schild, R., "Implementation of the Programming Language Pascal", Lecture Notes in Economics and Mathematical Systems, -75- (1972)
- *SFER PASCAL, Le langage de programmation PASCAL - compilateur pour les ordinateurs CII 10070, IRIS 80", IRIA (1975)
- Sointseff, N., "McMaster Modifications to the Pascal 8000 3.4 System", Computer Science Technical Note 74-CS-2, McMaster University, Ontario, Canada (November 1974)
- Takeichi, M., "On the Portability of a PASCAL Compiler", Proceedings of the 16-th Programming Symposium, pp. 90-98 (1975) in Japanese
- Takeichi, M., "PASCAL Compiler for the FACOM 230-38: Implementation Notes", Internal Report, University of Tokyo, Department of Mathematic Engineering and Instrumentation Physics (1975)
- Takeichi, M., "PASCAL -- Implementation and Experience", University of Tokyo, Department of Mathematic Engineering and Instrumentation Physics (December 1975)
- Thibault, D., Mancel, P., "Implementation of a Pascal Compiler for the CII Iris 80 Computer", SIGPLAN NOTICES -8-, 6, pp. 89-90 (1973)
- de Vries, W., "An Implementation of the language Pascal for the PDP 11 series, based on a portable Pascal compiler", Technische Hogeschool Twente, Enschede (March 1975)
- Weish, J., Quinn, C., "A Pascal Compiler for the ICL 1900 Series Computer", SOFTWARE-PRACTICE AND EXPERIENCE -2-, 1, pp. 73-77 (1972)
- Wirth, N., Hoare, C. A. R., "A Contribution to the Development of Algol", COMMUNICATIONS OF THE ACM -9-, 6, pp. 413-432 (1966)
- Wirth, N., "The Programming Language Pascal", ACTA INFORMATICA -1-, 1, pp. 35-63 (1971)
- Wirth, N., "The Design of a Pascal Compiler", SOFTWARE-PRACTICE AND EXPERIENCE -1-, 4, pp. 309-333 (1971)
- Wirth, N., "Program Development by Step-Wise Refinement", COMMUNICATIONS OF THE ACM -14-, 4, pp. 221-227 (April 1971)
- Wirth, N., "The Programming Language Pascal and its Design Criteria", presented at the Conference on Software Engineering Techniques (NATO Science Committee), Rome (October 1969); published in "High Level Languages", Infotech State of the Art Report 7 (1972)
- Wirth, N., "Systematisches Programmieren" (Taschebuch), Teubner-Verlag, Stuttgart (1972)
- Wirth, N., "The Programming Language Pascal (Revised Report)", Nr. 5, Berichte des Instituts für Informatik, Eidgenössische Technische Hochschule, Zurich (November 1972)
- Wirth, N., "On Pascal, Code Generation, and the CDC 6400 Computer", Computer Science Department, STAN-CS-72-257, Stanford University (1972) (out of print, Clearinghouse stock no. PB208519)
- Wirth, N., "Systematic Programming: An Introduction", Prentice-Hall, Englewood Cliffs, New Jersey (1973)
- Wirth, N., "On the Composition of Well-Structured Programs", COMPUTING SURVEYS -6-, 4, pp. 247-260 (December 1974)
- Wirth, N., "Algorithmen und Datenstrukturen", Teubner-Verlag, Stuttgart (1975)
- Wirth, N., "Algorithms + Datastructures = Programs", Prentice-Hall, Englewood Cliffs, New Jersey (1975)
- Wirth, N., "An Assessment of the Programming Language Pascal", IEEE TRANSACTIONS ON SOFTWARE ENGINEERING -1-, 2, pp. 192-198 (1975); SIGPLAN NOTICES -10-, 6, pp. 23-30 (June 1975)
- Wirth, N., "PASCAL-S: A Subset and its Implementation", Nr. 12, Berichte des Instituts für Informatik, Eidgenössische Technische Hochschule, Zurich (June 1975)
- Wirth, N., "Comment on A Note on Dynamic Arrays in Pascal", SIGPLAN NOTICES -11-, 1; pp. 37-38 (January 1976)

PAST ISSUES OF Pascal Newsletter (now Pascal News)

George Richmond, Computing Center, University of Colorado, started Pascal Newsletter with issue #1 in January, 1974. He proceeded to produce 3 more issues while doing the other thankless chores of distributing 2 Pascal compilers to dozens of sites and promoting Pascal in other ways.

In mid-1975 John Strait and I proposed a Pascal User's Group after having talked to several other Pascalers around the U.S. At the Minneapolis ACM '75 conference in October, 1975, we launched the group at an ad hoc meeting (35 persons) convened by Rich Cichelli and Bob (Warren) Johnson. A year later we began the task of producing 4 issues of Pascal Newsletter which PUG as a group assumed responsibility for.

John and I edited the first 2 issues with help from Tim Bonham on the Implementations section. By issue #8 John had less time for the constant demands of the newsletter and only promised occasional help, but with #8 Jim Miner, Sara Graffunder, and others volunteered to help. With this issue (#9 & #10), we have spread the load quite a bit, which only causes coordination problems!

- #1 January, 1974, University of Colorado Computing Center, (also SIGPLAN Notices 9:3 1974 March) 8 pages, edited by George Richmond. (* Mostly contained descriptions of the CDC-6000 implementation of unrevised Pascal. *) out of print
- #2 May, 1974, University of Colorado Computing Center, (also SIGPLAN Notices 9:11 1974 November) 18 pages, edited by George Richmond. (* A Pascal history; news of other implementations for unrevised Pascal; news of the new CDC-6000 implementation for revised Pascal. *) out of print
- #3 February, 1975, University of Colorado Computing Center, (also SIGPLAN Notices 11:2 1976 February) 19 pages, edited by George Richmond. (* Announcement of the book: Pascal User Manual and Report; Pascal usage questionnaire; revised History of Pascal; bibliography; news of Pascal-P; more on Pascal-6000 for CDC machines; letters to the editor. *) out of print
- #4 August, 1976, University of Colorado Computing Center, 103 pages (103 numbered pages), edited by George Richmond. (* 36 letters of correspondence dealing mostly with various implementations; implementors list; bibliography; news of new release of Pascal-P. *) out of print
- #5 September, 1976, Pascal User's Group, University of Minnesota Computer Center, 124 pages (65 numbered pages), edited by Andy Mickel. (* Short notes, 5 articles, general correspondence, and implementation notes were featured; Christian Jacobi, ETH Zurich supplied a description of Dynamic Array Parameters. *)
- #6 November, 1976, Pascal User's Group, University of Minnesota Computer Center, 180 pages (91 numbered pages), edited by Andy Mickel. (* News from members; a full membership roster; conference notices; information on back issues; 6 articles including 2 proposing directions for Pascal by G. Michael Schneider of the U of Minnesota, and Rich Cichelli of Lehigh University; much implementation news. *)
- #7 February, 1977, Pascal User's Group, University of Minnesota Computer Center, 90 pages (45 numbered pages), edited by Andy Mickel. (* More News from members; books; 3 articles; correspondence; implementation notes. *)
- #8 May, 1977, Pascal User's Group, University of Minnesota Computer Center, 128 pages (65 numbered pages), edited by Andy Mickel. (* News from members; Conferences; Books; Applications; 6 articles including one by Ken Bowles about a very complete inexpensive implementation for nearly every microprocessor in existence; Special topic: official standardization and clarified definition of Pascal; Portable Pascals, Feature implementation notes, Machine Dependent implementations, Index. *)

Back issue ordering information for #5-#8 is on the back of the ALL PURPOSE COUPON.

PUG FINANCES 1976-1977

Here are the details for our finances last academic year by both PUG(USA) and PUG(UK). For additional information see the EDITOR'S CONTRIBUTION (for a real con) under "PUG Finances."

PUG(USA) Accounts:

Income:
 \$3980.00 995 memberships @ \$4 (76-77)
 161.73 contributions
 70.00 miscellaneous back issues sold @ \$1

\$4211.73 TOTAL Income.

Expenditure:

\$ 123.37 buying (230) and mailing #4 from George Richmond
 492.70 printing (700) and mailing #5
 1239.50 printing (1050) and mailing #6
 697.17 printing (1000) and mailing #7
 1071.60 printing (1000) and mailing #8
 30.23 mailing originals of 5-8, etc. to PUG(UK) for reprinting
 92.13 promoting PUG (mass mailings)
 10.00 refunds for overpayment
 19.00 backissue requests for #4 forwarded to George Richmond
 101.09 miscellaneous postage for automatic backissues

\$3876.79 TOTAL Expenditure.

PUG(UK) Accounts: (submitted by David Barron, 15 August, 1977)

Income:
 £249.90 subscriptions for 76-77 (99 @ 2.50; 1 @ 2.40)

£249.20 TOTAL Income.

Expenditure:

£ 70.86 printing 250 copies of No. 6
 29.14 printing 350 copies of No. 7
 105.34 printing 450 copies of No. 8
 171.06 postage for 6, 7, and 8 including back issues

£ 376.40 total production costs

90.01 printing and posting No. 5 (450 copies)

£466.41 TOTAL Expenditure.

=====

PUG(USA) surplus	=	\$334.94
PUG(UK) deficit	=	£216.51 = \$380.00 approx.
Total deficit for year	=	\$ 45.06

Andy Mickel 77/09/01

ROSTER (77/09/09)

The PUG roster is sorted by mail code (USA first) and then alphabetically by country. Members span 31 countries and 47 states. Also supplied is a member index by last name to mail code. Institutional members begin with the prefix ATTN or ATTENTION.

You can see at a glance who is at a well known organization at a well known place. The roster makes a great organizing tool for our mutual communication! Please look yourself up to check for accuracy and then you can see who is nearby; why not phone them and talk about Pascal?

States with over 50 PUG members are: California - 171; Minnesota - 128; Texas - 62; Massachusetts - 61; and countries: United Kingdom - 101; Canada - 59; Germany - 57.

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