

PASCAL USER'S GROUP

USER'S  
GROUP

# PASCAL NEWSLETTER

NUMBER 8

COMMUNICATIONS ABOUT THE PROGRAMMING LANGUAGE PASCAL BY PASCALERS

MAY, 1977

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**RENEW!!**

## PASCAL USER'S GROUP POLICIES

Purposes - are to promote the use of the programming language Pascal as well as the ideas behind Pascal. Pascal is a practical, general purpose language with a small and systematic structure being used for:

- \* teaching programming concepts
- \* developing reliable "production" software
- \* implementing software efficiently on today's machines
- \* writing portable software

Membership - is open to anyone: particularly the Pascal user, teacher, maintainer, implementor, distributor, or just plain fan. Institutional memberships, especially libraries, are encouraged. Membership is per academic year ending June 30. Anyone joining for a particular year will receive all 4 quarterly issues of Pascal Newsletter for that year. (In other words, back issues are sent automatically.) First time members receive a receipt for membership; renewers do not to save PUG postage.

Cost of membership per academic year is \$4 and may be sent to:

Pascal User's Group/ %Andy Mickel/University Computer Center/227 Exp Engr/  
University of Minnesota/Minneapolis, MN 55455 USA/ phone: (612) 376-7290

In the United Kingdom, send £2.50 to:

Pascal Users' Group/ %Judy Mullins/Mathematics Department/The University/  
SOUTHAMPTON/S09 5NH/United Kingdom/ (telephone 0703-559122 x2387)

## PASCAL NEWSLETTER POLICIES

The Pascal Newsletter is the official but informal publication of the User's Group. It is produced quarterly (usually September, November, February, and May). A complete membership list is printed in the November issue. Single back issues are available for \$1 each. Out of print: #s 1,2,3,4 \*

The contribution by PUG members of ideas, queries, articles, letters, and opinions for the Newsletter is important. Articles and notices concern: Pascal philosophy, the use of Pascal as a teaching tool, uses of Pascal at different computer installations, portable (applications) program exchange, how to promote Pascal usage, and important events (meetings, publications, etc.).

Implementation information for the programming language Pascal on different computer systems is provided in the Newsletter out of the necessity to spread the use of Pascal. This includes contacts for maintainers, documentors, and distributors of a given implementation as well as where to send bug reports. Both qualitative and quantitative descriptions for a given implementation are publicized. Proposed extensions to Standard Pascal for users of a given implementation are aired. Announcements are made of the availability of new software writing tools for a Pascal environment.

Miscellaneous features include bibliographies, questionnaires, and membership lists. Editor's notes are in Pascal style comments (\*\*).

ALL THE NEWS THAT FITS, WE PRINT. PLEASE SEND WRITTEN MATERIAL TO THE NEWSLETTER SINGLE SPACED AND IN CAMERA-READY FORM. USE NARROW MARGINS; (LINE WIDTH 18.5 CENTIMETERS). REMEMBER, ALL LETTERS TO US WILL BE PRINTED UNLESS THEY CONTAIN A REQUEST TO THE CONTRARY.

- Andy Mickel, editor, John P. Strait, associate editor, April 26, 1977.



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This issue with so many important topics is late. I think that George Richmond deserves another round of thanks for the early work he did on Pascal Newsletter. With this, the fourth issue I've done, I have to say that it is a lot of work. Without Sara Graffunder and Jim Miner, who edited the Here and There and Implementation Notes sections respectively, this issue would not have appeared.

#### \* RENEW

We've lowered the cost of PUG membership by keeping the price the same (\$4<sup>1977</sup> < \$4<sup>1976</sup>)!

This is the last (and first) renewal notice you'll get. Please renew, especially if you think we are doing some good in the world. If you are not reading your own copy of the Newsletter, why not help us out: join for yourself (we need more members to keep the price the same). Just think of it as giving up eating out one night in the next year. And we won't refuse additional (no strings attached) contributions!

#### STANDARDS

See the Open Forum section for a series of letters.

#### MICROPROCESSOR Pascal

See the Here and There News section under Charles Bacon, P.M. Lashley, Steve Legenhausen, Andy Mickel, David A. Mundie, and see Implementation Notes under both "Comment: Microprocessors" and under individual specific manufacturers's names. And Ken Bowles's article.

#### Pascal Newsletter #9.

Deadline for written contributions is July 15. Changes in POLICY: #4 is now out of print. All written material must now be single spaced and typed with narrow margins. We are running out of room!

#### THIS ISSUE (#8)

Unfortunately we have had to cut material from this issue ("all the news that fits..."). George Richmond sent a 5 page bibliography which we couldn't find room for. It had only 15 new entries over his last one in #4, and is incomplete these days if you keep up with Pascal Newsletter. We were also unable to print a Roster increment as we did in #7. I regret this because it is the roster which enables Pascalers to get together especially if they are in the same area. This time the number of new members totals 345! It would have taken 6 full pages to print in a new compressed format! We just couldn't afford it. We also had to reformat every contribution to save space, and omit extraneous material.

But, we have no shortage of material (unlike the disease which afflicted the FORTRAN Bulletin, the LISP Bulletin, the SNOBOL Bulletin, etc.).

We have had many suggestions regarding the newsletter. We want to keep it informal and interesting and prevent its degeneration into a slick, useless, "professional" journal.

#### PUG and Pascal Newsletter Mechanics

PUG now has 943 members in 29 countries and 47 states! We need more members to stay financially solvent (we are currently in the black, barely) and we need them as well as renewals early in the academic year (preferably before August 15). I now strongly disagree with my earlier idea (and Mike Hagerty's letter in this issue) of becoming affiliated with ACM (like STAPL under SIGPLAN). Did you know that according to Garth Foster (January 6, 1977) STAPL (SIGPLAN Technical Committee on APL) only had 973 members after more than 5 years in existence? If we affiliated with ACM, the price would probably double, but we'd be compensated with fancy letterhead on the stationary.

## EDITOR'S CONTRIBUTION

PUG has a broad base with many non-academic members. We have kept the price low, publicized PUG in unconventional ways (unlike ACM) and in the process have become known in industry where the real changes can be made. We just completed our fourth mass mailing (350) on March 28 to the holdouts from George Richmond's old mailing list from newsletters 1-4.

I would like to encourage all PUG members to use their imaginations in making Pascal and PUG more visible. Write letters to the editor of popular trade journals such as COMPUTERWORLD, DATAMATION, COMPUTING EUROPE, etc. Distributors of compilers should send an All Purpose Coupon to each recipient of their implementations. Write to SIGCSE (Pascal's strong point is Computer Science Education). I can't do all of these things.

I've noticed some big discrepancies in PUG membership at several universities which have a fair amount of Pascal users. It seems that some local people have not done all they can to tell their users about PUG. Why is it for example that at the University of Minnesota there are 48 PUG members, at Lehigh University 13, at Indiana University, the University of Texas, and the Technical University of Berlin 7, and at the University of Illinois, Georgia Tech, the University of Southwestern Louisiana, Cornell, and the Imperial College London, etc. there are 6 PUG members while at the University of Colorado there is only 3, the University of Washington only 2, and at the University of Manitoba, SUNY Buffalo, and the University of Massachusetts only 1?

#### BACK ISSUES

I'm sorry that we are slow, but we are not in the publishing business. As I stated in #7 we have had terrific growing pains resulting from not realizing back in September how popular PUG was going to be. We are temporarily out of print with #5 and this holds up mailing 5,6, and 7 to new members as we cannot afford postage for separate mailings. As it is, it is very expensive to mail back issues. At PUG "central" here in Minnesota, we have no secretaries. John and I (with help from people like Sara and Jim) have opened all our own mail, answered with personal notes all inquiries, handwritten most addresses on envelopes, handled all the typing, mailing of back issues, filing, accounting, the mailing label data base; and sent invoices and bills to persons who haven't paid. That's right, we never planned on some people not paying. Those who still owe PUG money are: Bengt Norstrom, Lars Magnusson, Bernhard Nebel, Roland F. Bloemer, Stanley B. Higgins, Karl J. Astrom, Wayne Fung, John S. Sobolewski, T. Hardy, Ada Szer, and John Nolan. This is as of today, and I wouldn't be surprised to see their money soon, and I don't in any way want to imply that each does not eventually intend to pay!

#### SUMMARY

I want to thank all of those who have helped this year, especially Judy Mullins, David Barron, Carroll Morgan and Tony Gerber (who have enabled Australasian re-mailing with zero compensation) and Tervio Hikita for remailing #7 to Japanese members. Finally many thanks are due to the University Computer Center here at the University of Minnesota, particularly Peter Patton, our director, and Lawrence Liddiard our associate director for systems for enabling PUG to thrive.

*Andy*

- April 26, 1977

# HERE AND THERE WITH PASCAL

## NEWS (ALPHABETICAL BY LAST NAME)

Charles Bacon, 10717 Burbank Dr., Putomac, MD 20854 (PUG member): "I am interested in a Pascal running on a RSX-11M system as well as on the KI-10...also on any 8080 system." (\* 1/10/77 \*)

Mark Becker, 300 Collingwood Ave., Fairfield, CT 06432 (PUG member): "I'd like to locate a version of PASCAL for the PDP 11 that does not use or require the Floating Point Processor." (\* 1/31/77 \*)

(\* From the newsletter of the University Computer Center at the University of Southern California, 1020 W. Jefferson Blvd., Los Angeles, CA 90007: UCC has added several JCL procedures (for its IBM 370 system) so that users can invoke the University of Manitoba version of Pascal. The procedures perform one-step monitor; compile; compile, load and go; compile, linkedit; compile, linkedit, and go; load and go; linkedit and go; and compile and punch an object deck. 1/1/77 \*)

Gary Boss, 517 N. 7th St., Bismarck, ND 58501 (PUG member): "I am interested in knowing about chess programs written in Pascal."

Kevin W. Carlson, 1531 Simpson St. Madison, WI 53713 (PUG member): (\* Wants to know if there is a group of Pascal users in or near Madison. 2/9/77 \*)

C. R. Corner, 514 S. 9th St., Moorhead, MN 56560 (PUG member): "I'm trying to implement Pascal on the PDP-8 and on the PDP-11. Any suggestions?" (\* 3/1/77 \*)

Frederick C. Cowan, The Aerospace Corporation, Mail station A2-2043, P. O. Box 92957, Los Angeles, CA 90009 (PUG member): "I am interested in the mods to make [release 2 of PASCAL 6000-3.4] run on the 7600 under Scope 2.2." (\* 5/18/77 \*)

Mattia Hmeljak, Ist. di Elettronica ed Elettronica, Università di Trieste, Trieste, Italy (PUG member): "In Trieste University a CDC computer exists and a Pascal compiler is implemented there.

We have also an HP-2100 mini-computer and we would like to run some programs there for teaching and for research. For these reasons we intend to implement the Pascal compiler on this machine.

As a first step . . . we intend to write a P-code interpreter using the Pascal-written interpreter and translating it into H-P Algol. Therefore we would be glad to know if someone else is working to implement Pascal on the same mini-computer. . . . We thank you also for any information you will consider useful to give us for our work." (\* 2/5/77 \*)

Stanley B. Higgins, Dept. of Medicine, Vanderbilt University, Nashville, TN 37232 (PUG member): ". . . our group operates a PDP-11/40, PDP-11/34 and a PDP-11/55 . . . software . . . by DEC . . . RT-11 and RSX-11M operating systems. . . . We would be most interested in knowing of [Pascal compilers]." (\* 2/23/77 \*)

Robert L. King, 1452 Sandra Dr., Indicutt, NY 13760 (PUG member): "If possible, please forward information on free or very inexpensive Pascal compilers for an IBM 370/178 under VSI with 3330's and 9-track tapes." (\* 2/1/77 \*)

Joseph Lachman, Computer Center, University of Illinois at Chicago Circle, Box 4348, Chicago, IL 60680 (PUG member): ". . . At present the UICC computer center has no Pascal compiler. Any advice you could offer us relative to the availability, quality, and costs of PASCAL compilers that will run on IBM/370 or DEC PDP-11 computers would be greatly appreciated." (\* 4/5/77 \*)

J. Larmouth, Director, Computing Laboratory, University of Salford, Salford M5 4WT, England (PUG member): "Having moved to Salford from Cambridge, I have ceased work on Pascal. Unfortunately there was nobody available at Cambridge to continue the work. so

that our efforts towards a 370 implementation should be considered abandoned.

"We did produce and distribute an interpreter system but Cambridge . . . does not have the man-power to continue even this service.

"Sorry this is all so negative. My interest in Pascal remains, although you might be interested to know that I am perhaps more interested in TUCLID, as would, I think, be most members of PUG if they knew more about it." (\* 1/5/77. For information about tuclid, consult B. W. Lampson, et. al., "Report on the Programming Language tuclid," SIGPLAN Notices, 12:2 (February 1977); and G. J. Popek, et. al., "Notes on the Design of TUCLID," SIGPLAN Notices, 12:3 (March 1977), 11-19. \*)

P. M. Lashley, Director of Computing CSCS, POB 764, 114 S. Bullard St., Silver City, NM 88061: (\* From a letter to the editor of Byte, 2:2 (February 1977), 77-78 \*) "I write primarily in response to Mr. Skye's letter in your August issue. I can only conclude that he had been with IBM too long, otherwise he would not attempt to debase the 8080 with FORTRAN or PL/1. FORTRAN is a virtual pterodactyl, flying solely by inertia, whereas PL/1 is much better, but too rambling in construction. If he indeed takes up the admirable task of writing a high level compiler for the 8080, he would be better advised to base his compiler on a fully structured language such as PASCAL." (\* The letter goes on for several paragraphs. \*)

Steve Legenhausen, 12 Barnard Street, Highland Park, NJ 08904 (PUG member): "I think it is absolutely important that persons promoting Pascal realize the danger of BASIC's becoming the permanent and only language on microprocessors. One only has to pick up any issue of the computer hobbyist magazines such as Dr. Dobbs Journal, Byte, Kilobaud, Creative Computing, etc., to find that each is filled with BASIC. Some effort should be put forth to promote Pascal in this medium." (\* 12/31/76 \*)

Chris P. Lindsey, Computing Coordinator, Harvey Mudd College, Claremont, CA 91711 (PUG member): "Do you know of a well-documented, error free version of PASCAL which runs on a DECsystem-10 with a KA processor?" (\* 1/77 \*)

R. A. Lovestadt, 20427 SE 192, Renton, WA 98055 (PUG member): "Any PASCAL work on an HP5000?" (\* 2/10/77 \*)

William Lyczko, Software Development, NCR Corporation/Terminal Systems, 950 Dunby Road, Ithaca, NY 14850 (PUG member): "I am interested in any information you may have on implementation of PASCAL for microprocessors." (\* 1/7/77 \*)

Philip J. Malcolm, former address Zeus-Hermes Consultants Ltd., Shropshire House, 2-10 Copper Street, London; new address c/o Bank of Adelaide, 11 Leadenhall St., London EC3V 1LP, England (PUG member): "Zeus-Hermes is . . . investigating the possibility of adopting a Pascal -- or Modula -- type language for in-house development of mini- and micro-computer software across a broad range of target machines.

"Ideal would be a compiler:

written in its own source language; and executable on a microcomputer (with say 32-64K bytes of RAM, diskettes); and easily transportable to different target machines; and relying on a very small run-time monitor/support package.

"We would be delighted to hear from those possessing or working towards such a system." (\* 1/3/77 \*)

Andy Mickel, Univ. Computer Center, 227 Exp. Inqr., U. of Minnesota, Minneapolis, MN 55455 (PUG member) reports receiving an educational questionnaire from Intel about computer courses and micro-processors. The question, "What programming languages are used?" contained the check-off answers Fortran, Algol, PL/1, PL/M, Basic, and Pascal. Not included were Cobol, Lisp, Snobol, etc. (\* Andy's response to the catch-all question at the end was, "When are you going to support Pascal or a Pascal-subset and give up on Basic?" \*)

David A. Mundie, French Department, 302 Cabell Hall, University of Virginia, Charlottesville, VA 22903 (PUG member): "Is Zilog really making a microprocessor that executes PASCAL constructs as its machine-level language (Byte, v.2, no. 4, April 1977, p. 140)?" (\* 4/3/77 Will a PUG member please write Zilog to ask, then send the answer to the newsletter? \*)

Mark O'Bryan, Computer Center, Western Michigan University, Kalamazoo, Michigan 49001: ". . . I'm in charge of PASCAL implementation and maintenance at WMU. We have an old version of NAGSL's compiler for the PDP-10 and will be releasing it for use here in early March. I'll keep you informed on user reaction when it happens.

Gene H. Olson, 421 County Road J, Apt. 512, Hopkins, MN 55343 (PUG member): "The best argument against formatted reads has yet to appear in the PUG newsletter. In processing large amounts of formatted data (the supposed rationale of formatted reads) keypunch or similar errors cause both formatting and content errors which render formatted reads useless. In other words, in a production environment, the program must check data character-for-character as it is coming in." (\* 2/25/77 \*)

Jerry L. Ray, 21320 Oldgate Rd., Ithaca, NE 68022 (PUG member): "I am attempting to sell the idea of using PASCAL instead of FORTRAN as a first language in a Computers & Business course. Any information to support my argument (institutions using PASCAL, etc., as well as the structure aspects) would be greatly appreciated." (\* 4/8/77 \*)

R. Waldo Ruth, Computer Science Dept., Taylor University, Upland, IN 46989 (PUG member): ". . . I would also like to know about the availability of a PASCAL package to run on DEC 11 systems under RSTS or RT-11." (\* 2-24-77 \*)

Carl W. Schwarcz, Digital Equipment Corp., MR 1-2/t27, 200 Forest Street, Marlboro, MA 01752 (PUG member): ". . . While employed by Control Data I was responsible for the design and implementation of two compilers for a Pascal-based programming language ('the Software Writers' Language') for the Cyber 170 and Cyber 270." (\* 1/25/77 \*)

Arthur I. Schwarz, Hughes Aircraft Co., Bldg. 150/MS A222, Culver City, CA 90230 (PUG member): "Our installation is currently interested in gaining some expertise in using PASCAL. We would like to obtain a compiler for use on our Sigma 9 computer, or lacking this, a compiler with accessible code generators for either the CDC or IBM computer lines." (\* 2/8/77 \*)

Wayne Seipel, Box 8259 U.T. Station, Austin, TX 78712 (PUG member): "The University of Texas Computer Science department needs a PASCAL compiler for a [Data General] Nuva 30. The department has just purchased 2 processors, each with 32K words of memory and a 10Mega-byte disk. These will be used by both graduate and undergraduate students in a hands-on environment. Current plans call for the development of an operating system, and a PASCAL compiler would make life orders of magnitude easier. Any information on a compiler (completed, standard, PASCAL1, or PASCAL2) will be greatly appreciated.

Contact either James Peterson, Computer Science Dept., University of Texas, Austin, TX 78712, or myself." (\* 3/14/77 \*)

Kevin Weller, 147 Cornell Qtrs., Ithaca, NY 14850 (PUG member): "How anyone implemented PASCAL on a PDP 11/45? (Is a Jovial interpreter available?)" (\* 1/21/77 \*)

Nicholas Mybolt, 576 Lau Street, Hillside, NJ 07205 (PUG member): "Here at NJIT, Pascal is beginning to be used in a junior-level course in algorithms and data-structures; there is also individual interest in Pascal among faculty members and the student body.

"The student branch of the ACM is attempting to act as a medium of information in this matter. We are interested in your group and any related publications and activities. . . ." (\* 2/4/77 \*)

(\* From a press release by the U. S. Department of Defense distributed by the British Computer Society, March 22, 1977, on "The U. S. Department of Defense High Order Language Effort," to reach a consensus on a common high order language for embedded systems, p. 8 \*):

"Without exception, the following languages were found by the evaluators to be inappropriate to serve as base languages for a development of the common language: FORTRAN, COBOL, TACPOL, CMS-2, JOVIAL 373, JOVIAL 339, SIMILA 87, AEDOL 40, and CORAL.

"Proposals should be solicited from appropriate language designers for modification efforts using any of the languages, PASCAL, PL/I, or BASIC 68 as base languages from which to start. These efforts should be directed toward the production of a language that satisfies the DoD set of language requirements for embedded computer applications."

# HERE AND THERE WITH PASCAL

## CONFERENCES

International Federation of Information Processing Societies (IFIP), August 8-12, 1977 in Toronto. (\* Would a PUG member who is there organize and publicize a Pascal User's Group gathering. We would, but we won't be there. Also, send in a resume of the meeting for Newsletter No. 9. Thanks. \*)

ACM '77, Seattle, Washington, October 17-19, 1977. (\* The same here for Newsletter No. 10. \*)

REPORT on the Third Annual Computer Studies Symposium at Southampton (March 24-25)

### "PASCAL - THE LANGUAGE AND ITS IMPLEMENTATION"

A little over halfway in this whirlwind, 48 hour happening, the medieval banquet began. David Barron (the baron) and Judy Mullins (the baroness) enjoyed the honor of reigning over and hosting the attendees; it was a delightful time indeed.

And so was the whole symposium! I must commend Judy for organizing the symposium down to the last detail and thank David for making it a reality. It was a success by several different measures. Around 134 persons attended. The proceedings officially listed (including speakers and last minute replacements): Austria 3; Belgium 4; Canada 1; Denmark 7; France 4; Germany 16; Great Britain 72; Ireland 8; Netherlands 2; Sweden 9; Switzerland 5; and the USA 3; The proceedings contain the texts of all 11 presentations and will be published later this year (see Books section). All except Per Brinch Hansen's which will appear in an IEEE publication.

David Barron, U of Southampton, opened the symposium with a talk entitled "Perspectives on Pascal" which looked at the past, present and future and concluded with a call to join a "Society to Combat Well-meant Attempts to Change Pascal (SCWACP)."

Urs Ammann, ETH, Zurich, was introduced as the great-grandfather of all Pascal compiler writers and summarized his work over the last 6 years in "The Zurich Implementation."

Jim Welsh, Queen's U, Belfast, likewise introduced as the grandfather of Pascal compiler writers detailed development and performance of "Two ICL 1900 Pascal Compilers."

David Watt, U of Glasgow, presented an extensive description of "A Pascal Diagnostics System" for the ICL 1900 implementation.

Mike Rees, U of Southampton, presented a description of the Pascal compiler effort on the ICL 2970 underway for the past 9 months in "Pascal on an Advanced Architecture."

Judy Mullins, U of Southampton, did not dream up hypothetical architecture, but rather critically combined existing architectural features in designing "A Pascal Machine?"

The next day began with Per Brinch Hansen, U of S. California describing his "Experience With Modular Concurrent Programming" and his opinions of the future.

Pierre Desjardins, U of Montreal, substituted for Olivier Lacarme, U of Nice, and sketched an overview of "Pascal and Portability" issues.

Brian Wichmann, National Physical Laboratory, Middlesex, coalesced various aspects on "The Efficiency of Pascal" in comparison to other languages and in different environments.

Graeme Webster, Teeside Polytechnic, advised others who introduce Pascal into the curriculum with a talk on "Pascal in Education."

There were two discussion sessions. Brian Wichmann led the first on "Pascal on Minis and Micros" and I introduced the second on "The Future of Pascal" concerning standards and extensions issues.

In between time, the opportunity to talk and argue with other Pascalers from so many places was a real treat for all, I'm sure. I managed to meet 48 people, and in the process confessed to Urs that it was hard to get used to intense, sudden exposure to so many cultural backgrounds.

Perhaps the long range accomplishment of the symposium was to pass on a consensus to the rest of us in PUG regarding standards. See OPEN FORUM.

- Andy Mickel, April 17, 1977



**Third Annual Computer Studies Symposium  
"PASCAL - the LANGUAGE and its IMPLEMENTATION"  
University of Southampton, March 1977**

SYMPOSIUM ATTENDEES, (127 pictured here; not all names and faces known together!): A full list of names appears in the symposium proceedings.



**Third Annual Computer Studies Symposium  
"PASCAL - the LANGUAGE and its IMPLEMENTATION"  
University of Southampton, March 1977**

**SYMPOSIUM SPEAKERS, (pictured from left to right):** David Barron, Per Brinch Hansen, Andy Mickel, Pierre Desjardins, Graeme Webster, David Watt, Mike Rees, Urs Ammann, Brian Wichmann, Jim Welsh, and Judy Mullins.

## BOOKS AND ARTICLES

(\* D. W. Barron, working with Rich Stevens, has offered to take over this section. What follows is a notice of the policy for the section, beginning with No. 9 \*)

### POLICY

In this section we shall try to keep PUG members up-to-date with the PASCAL literature under the general headings languages, Textbooks, Implementation, Applications. At the least we shall give a brief citation of title, author and publisher. If possible we shall include a brief abstract and, if the importance warrants it, a critical review. In addition from time to time we shall give (hopefully) complete annotated bibliographies of selected areas: with the feedback from PUG members we should be able to build up a really comprehensive guide to the PASCAL literature.

Books and papers in the established journals are fairly easy to keep track of, but internal reports present much more difficulty. If you (or your institution) produce a report that you are willing to circulate, please send me a copy of the title page, or better still a copy of the report. The address is:

David Barron	or	W. Richard Stevens
Pascal User's Group (U.K.)		Kitt Peak National Observatory
Department of Mathematics		P. O. Box 26732
The University		Tucson, AZ 85726
SOUTHAMPTON, SO9 5NH		U.S.A.
U.K.		

As with the rest of PUG, the success of this enterprise will rest largely on the enthusiasm and help of the membership.

10 February 1977

David Barron

(\* The policy begins with the next issue. What follows is our new information about books and articles, and a review. \*)

### BOOKS

A Concurrent Pascal Compiler for Minicomputers, by Al Hartman, to be published by Springer-Verlag as Volume 50 in their Lecture Notes in Computer Science. Probably available by the end of April 1977. (\* Al writes that the book will be of especial interest to "... any of your membership using the Concurrent Pascal or Sequential Pascal compilers developed at Caltech for the PDP-11/45 minicomputer." \*)

Introduction to Computer Science, by Ken Bowles (U. of California, San Diego), to be published by Springer-Verlag in October 1977. (\* The book is computer graphics oriented and uses Pascal as the teaching vehicle. Note the change of title from our citation in No. 5. \*)

Introduction to Programming and Problem Solving with PASCAL, by G.M. Schneider, D. Perlmutter, and S. Weingart, to be published in hardback by Wiley and Sons in January 1978. A camera-ready manuscript of the book 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 of the book.

Pascal--the Language and its Implementation, proceedings of the Symposium in Southampton, March 24-25. (\* At press-time, there is as yet no definite publisher and publication date. Perhaps details will be settled in time for publication in No. 9 \*)

Structured Programming and Problem Solving with PASCAL, by Richard Kieburtz, Department of Computer Science, SUNY at Stony Brook, Stony Brook, NY 11794, to be published by Prentice-Hall sometime in 1977. (\* This is rumored; we aren't sure of the title, etc. We hope we'll have the facts in time for No. 9. \*)

## ARTICLES

"Efficient Implementation and Optimization of Run-time Checking in Pascal," by Charles N. Fischer and Richard J. LeBlanc, SIGPLAN Notices, 12:3 (March 1977); 19-24.  
(\* from the abstract \*): "Complete run-time checking of programs is an essential tool for the development of reliable software. A number of features of the programming language PASCAL (arrays, subranges, pointers, record variants (discriminated type unions), formal procedures, etc.) can require some checking at run-time as well as during compilation. The problem of efficiently implementing such checking is considered. Language modifications to simplify such checking are suggested. The possibility of optimizing such checking is discussed."

"Proceedings of the All-Union Symposium on Implementation Techniques for New Programming Languages, Novosibirsk 1975."

(\* This publication came to us from David Barron, who received it from PUG member S. Pokrovsky, Computing Centre, USSR Academy of Sciences, Novosibirsk 630090, USSR. Most of the articles are in Russian, but the number of bibliographical references to publications about Pascal lead us to believe that the articles might be of interest to PUG members. Would someone who reads Russian (easily) volunteer to read and abstract the relevant articles for No. 9? We'll send a copy of the journal to you if you write to us in Minneapolis. The abstracts could go to David Barron for the next newsletter. \*)

"Programming Languages: What to Demand and How to Assess Them," by Niklaus Wirth, Berichte des Instituts für Informatik, t. T. H. Zurich, No. 17 (March 1976), 1-24.

(\* from the abstract \*): "The software inflation has led to a software crisis which has stimulated a search for better methods and tools. This includes the design of adequate system development languages."

This paper contains some hints on how such languages should be designed and proposes some criteria for judging them. It also contains suggestions for evaluating their implementations, and emphasizes that a clear distinction must be made between a language and its implementation. The paper ends with concrete figures about a Pascal implementation that may be used as yardstick for objective evaluations."

An extract from "Professor Cleverbyte's Visit to Heaven," by Niklaus Wirth, Berichte des Instituts für Informatik, t. T. H. Zurich, 17 (March 1976), 25-31. (\* To appear in Software Practice and Experience \*)

(\* from the abstract \*): "The following fable is a grotesque extrapolation of past and current trends in the design of computer hardware and software. It is intended to raise the uncomfortable question whether these trends signify real progress or not and suggests that there may exist sensible limits of growth for software too."

"The Software Development System," by C. G. Davis and C. R. Vick, IEEE Transactions on Software Engineering, 3:1 (January, 1977), 69-84. (\* A summary by PUG member Nick Sointeff, who sent in the citation \*): Implementation of PDL-2, an extension of Pascal, to, among other things, include concurrent processing. Are also writing an OS in PDL-2.

"Some High-level Language Constructs for Data of Type Relations: An Investigation based on Extensions to Pascal," by Joachim W. Schmidt, Bericht Nr. 31, Institut für Informatik, Hamburg, January 1977.

(\* from the abstract \*): "For the extension of high-level languages by data types of mode relation, three language constructs are proposed and discussed:  
- a repetition statement controlled by relations  
- predicates as a generalisation of boolean expressions  
- a constructor for relations using predicates."

The language constructs are developed step by step starting with a set of elementary operations on relations. They are designed to fit into PASCAL without introducing too many additional concepts." (\* These extensions, which process relational data bases, are being experimentally implemented in Nagel's DTC-10 compiler at Hamburg \*)



## BOOK REVIEW

INTRODUCTION TO PASCAL, C.A.G. Webster, Heyden and Son, 1976.  
No. of pages: 129. Price: \$5.50, \$11.

For several years now there has been an increasing need for an introductory text on programming which uses Pascal as the vehicle. Unfortunately, Webster has not given us that book. The following may indicate why.

In the preface the author claims coverage of an "essentially full version of the language, discussing where appropriate ... the original report and its revision (sic)". In fact the book describes the original (1971) language and supplements this with incomplete and inaccurate summaries of the 1972 revision. No warning is given that the language has developed vigorously since 1972. This makes the book almost useless in conjunction with compilers for the latest version of the language, Standard Pascal.

One might expect that a book on Pascal would pay some heed to modern ideas of programming methodology. Instead we find algorithms introduced by machine-language programs and illustrated by "spaghetti" flowcharts. The concept of stepwise refinement ("top-down programming") is not mentioned until three quarters of the way through the book and then only in the context of procedure declarations. No substantial guidance is given in vital areas such as program design, testing, debugging, correctness and maintenance. It might almost be a book on BASIC!

These global defects are compounded by a list of errors of fact, omission and commission which leaves a blemish in almost every page. The following are just a few of the more serious.

(a) Variable parameters of procedures are (wrongly) said to be passed by reference, in a section which manages to make the (very simple) parameter-passing rules of Pascal seem almost incomprehensible in their complexity.

(b) Several examples of bad practice in the use of real arithmetic are hardly compensated by a superficial warning about the comparison of real values.

(c) The operator NOT changes the state of the following operand, according to Chapter 4.

(d) Chapter 6, under the heading "Initialising variables", describes the definition of symbolic constants. The initialization of variables is also described, but without warning that the feature is not part of the defined language.

(e) There are many lexical, syntactic and logical errors in the programming examples, some of them seemingly calculated to cause the maximum confusion for the beginner. For example, despite a warning early-on about the precedence of relational operators in Pascal, almost all the more complex Boolean expressions in the book are wrongly bracketed (or not bracketed at all). The following, given as a way of skipping characters up to a certain point in the end of file, is quite typical:

```
REPEAT (input) UNTIL (input) AND NOT eof (input)
```

In short, avoid this book.  
W. Findlay  
University of Glasgow

## APPLICATIONS

(\* Reports of applications come to the Newsletter from PUG members, primarily. If you know of applications which use PASCAL, please send us the details. \*)

### Progress Report on PLT - March, 1977

PLT (Programming Language for Teaching) is a machine independent CAI/CMI (Computer Aided Instruction/Computer Managed Instruction) system implemented entirely in PASCAL-6000. PLT features a concise structured lesson creation language implemented with a fast single pass compiler, an efficient interactive interpreter, and full lesson and student monitoring facilities.

The PLT system will automatically step individual students through a series of lessons and tests. Reports by student and/or lesson-tests can be generated using the system's reporting facilities.

PLT is in full production use at Lehigh University and is being used to implement a series of lessons on PASCAL programming.

PLT will be released as an unsupported product after completion of its system internals manual (about April 30, 1977). For further information please write to

Richard J. Cichelli      Christmas-Seacon Hall 14  
Computer Science Group    Lehigh University  
Department of Mathematics    Bethlehem, PA 18015

### RUNOFF text formatter

A version of RUNOFF (the well-known text formatter available on the DEC-10 and other machines) is available in Pascal on the CDC Cyber 175. Educational institutions may get it on a free exchange basis provided you send a tape, expect no immediate response on bug-fixes, and do not distribute it to others. Documentation is also available. Write to Bob Foster, Computing Services Office, University of Illinois, Urbana, IL 61801.

### SLIP--A System for cross compilation.

Programs are written in Pascal. The target code is macro-generated with Stage 2 (using an intermediate code). Complete. Available for distribution. Michel Galinier (\* PUG member \*), Université P. Subatier-Informatique, 118 Route de Narbonne, 31077 Toulouse Cedex, France. (\* 1/5/77 \*)

(\* from a news brief in Electronics, March 17, 1977, p. 140 \*): "Electro-Scientific Industries, Inc., Portland, Ore., is beginning to offer its own compiler for use by others on the [DEC PDP-11]. At the end of last year, Computer Automation Inc., Irvine, Calif., announced a combined compiler-interpreter for its own mini-computers. Both companies point out that Pascal ... is simpler to use than either Fortran or Basic. ISI is aiming at applications in automated test and data-acquisition systems and in its own laser trimmers. Computer Automation likes it for developing compilers and translators."

(\* T.T. Bell, D.C. Bixler, and M.E. Dyer, "An Extendable Approach to Computer-Aided Software Requirements Engineering," in Structured Design, Infotech State of the Arts Conference, 10/18-20/76, pp. 3-27, also in IEEE Transactions on Software Engineering, 3:1 (January, 1977), 49-60) report that TRW used Pascal as the implementation language in its computer-aided system for maintaining and analyzing system software requirements. (\* The simulator generator transforms the [Abstract System Semantic Model (\* a database \*)] representation of the requirements into simulator code in the programming language PASCAL. The flow structure of each [Requirement Network (R\_NET) (\* the class of processing flow specifications \*)] is used to develop a PASCAL procedure whose control flow implements that of the R\_NET structure. Each processing step (ALPHA) of the R\_NET becomes a call to a procedure consisting of the model or algorithm for the ALPHA. The models or algorithms are written in PASCAL. (\* from p. 18 \*)

### PASCAL PRINTER PLOTTER

A listing (6 pages) of the Pascal code for the printer platter described in PUGN No. 7 is available free. Write to Herb Rubenstein, University Computer Center, 227 Experimental Engineering, University of Minnesota, Minneapolis, MN 55455.

