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NEW TRICKS WITH MAGIC

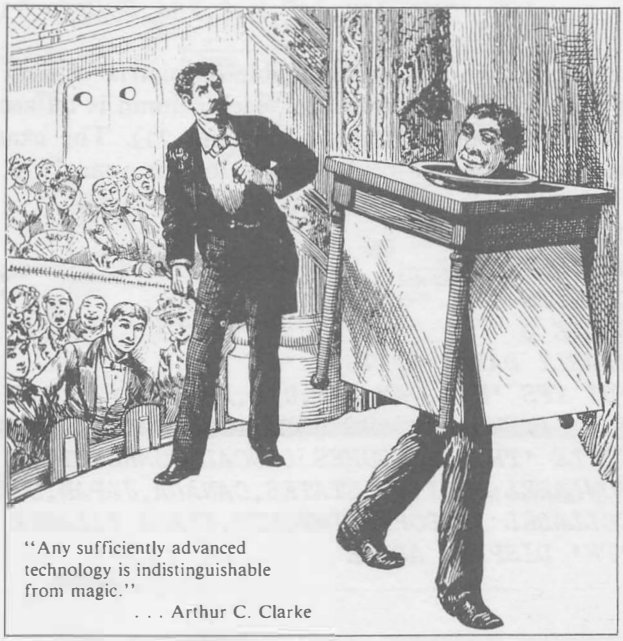
David Keith, Toronto

Users of MAGIC will be pleased to learn that a new 140 page manual on MAGIC is available. The new publication, entitled **'MAGIC Users Manual'** replaces the older text 'MAGIC for Timeseries Analysis'. Note that the word Timeseries has been dropped from the title. The manual concentrates on practical applications of MAGIC with over 100 examples drawn from several of the public data bases on the SHARP APL system. Copies of the manual are available from your nearest I.P. Sharp office.

For the past five years, MAGIC has proven its usefulness as a tool for retrieving and analysing timeseries data from the Sharp public data bases. It is a simple and consistent access method to the 20 million or so timeseries on the I.P. Sharp system, and has permitted computer access to data by people not necessarily familiar with computers. MAGIC has always been a 'two-dimensional system'. Up to now, the rows (first dimension) have always been the **items** or **facts**, and the second dimension (the columns) has been **time**. Thus, a simple MAGIC statement such as:

```
3 PUT (ITEM 1) PLUS (ITEM 2)
```

requests that *ITEM* 1 be added to *ITEM* 2 on a period by period basis, and that the resulting sum be put away as *ITEM* 3, a new row of data.



"Any sufficiently advanced technology is indistinguishable from magic."
. . . Arthur C. Clarke

CONTENTS

*Illustration courtesy of Jot Archives

If it is so easy to access and manipulate data where time is involved, an obvious question to ask is, 'why can't the same simple operations be performed when time is not one of the dimensions?' With the addition of a new MAGIC option, *NOTIMESERIES*, time no longer needs to be one of the dimensions. We think that this new facility provides MAGIC with considerably more power and flexibility and is a step toward making MAGIC a generalized analysis and report formatting language.

The *TIMESERIES/NOTIMESERIES* option is now the single most important setting in MAGIC, affecting almost all of MAGIC's other keywords. For example, the scope of MAGIC's SUPERPLOT system has been greatly expanded with the advent of *NOTIMESERIES*, since the X-axis of a plot can now be something other than time.

Setting the *NOTIMESERIES* option has direct impact on the results returned by data base access functions. The results are still two-dimensional, but with a difference. For example, the International Financial Statistics data base (IFS) is structured such that for each of approximately 150 countries, there are several timeseries (or accounts). Since time is an implicit part of this data, it is still necessary to set a timeframe. Most often, the timeframe selected is for a single point in time. An access such as:

```
YEARLY DATED AT 78
IFS 'USA,CAN,JAP,U.K,FRA,BEL/70,71'
```

returns a two-dimensional table or matrix of data which has six rows and two columns. Each row is the data for a country and each column is an account. Column 1 contains exports (account 70) and column 2 contains imports (account 71). The example below shows the use of the *NOTIMESERIES* option to examine trade figures for the year 1978.

```
CLEAR
NOTIMESERIES
COLWISE
SCALE 0
YEARLY DATED AT 78
PUT IFS 'USA,CAN,JAP,U.K,FRA,BEL/70,71'
PUT (ITEM 1) MINUS (ITEM 2)
TITLE 'TRADE FIGURES (LOCAL CURRENCY) - 1978'
ROWLABEL 'UNITED STATES,CANADA,JAPAN,U.K.,FRANCE,BELGIUM'
COLLABEL 'EXPORTS,IMPORTS,TRADE BALANCE'
'PH' DISPLAY ABOVE
```

TRADE FIGURES (LOCAL CURRENCY) - 1978

	EXPORTS	IMPORTS	TRADE BALANCE
UNITED STATES	143,663	183,093	(39,430)
CANADA	54,957	52,978	1,979
JAPAN	20,556	16,728	3,828
U.K.	37,363	40,969	(3,606)
FRANCE	357,595	368,594	(10,999)
BELGIUM	1,410	1,526	(116)

If a timeframe is set which covers more than one period, each data element returned by the access function is a summarization across time, using the currently set summarization rule. Thus setting a timeframe which covers five years of history, and setting the *AVERAGES* summarization option in the above example, would permit the calculation of the average exports, imports and trade balances across five years, for each country.

With *NOTIMESERIES* set, a user still deals with two dimensions. Since neither of the dimensions is time, a further option setting allows the specifications of whether the columns (*COLWISE*) or rows (*ROWWISE*) are the items. Thus, with *COLWISE* set, each data item is a column. Each use of *PUT* creates columns of data. When *SUM* is used, several columns can be summed up into a single item, which can then be *PUT*, if desired, as a new column of data. For example, if column 1 (*ITEM* 1) is the cost of fuel for each of eleven airlines for a particular month, and column 2 (*ITEM* 2) is the number of gallons consumed in the same month, then:

```
3 PUT (ITEM 1) DIVIDED BY (ITEM 2)
```

calculates the cost of fuel per gallon for one month for each airline (11 numbers) and *PUT*s that result away as *ITEM* 3, a new column. As expected, if *ROWWISE* is set, each item is a row, and a statement such as the one above continues to work, but across the rows instead of the columns. It is possible to switch back and forth between *COLWISE* and *ROWWISE* with interesting results.

Because each column and row may require labels for output purposes, two new keywords, *COLLABEL* and *ROWLABEL*, have been added. These new keywords behave in a manner similar to the *LABEL* keyword, which is used to specify labels for items in the *TIMESERIES* case. One of the nicest features of the new *NOTIMESERIES* option is its simplicity. For those users already familiar with MAGIC, only a few keywords have to be learned in order to make use of this new feature. In fact, the *NOTIMESERIES* option was added to MAGIC with the inclusion of only eight new keywords:

TIMESERIES	*NOTIMESERIES*
COLWISE	*ROWWISE*
NEWCOLLABEL	*COLLABEL*
NEWROWLABEL	*ROWLABEL*

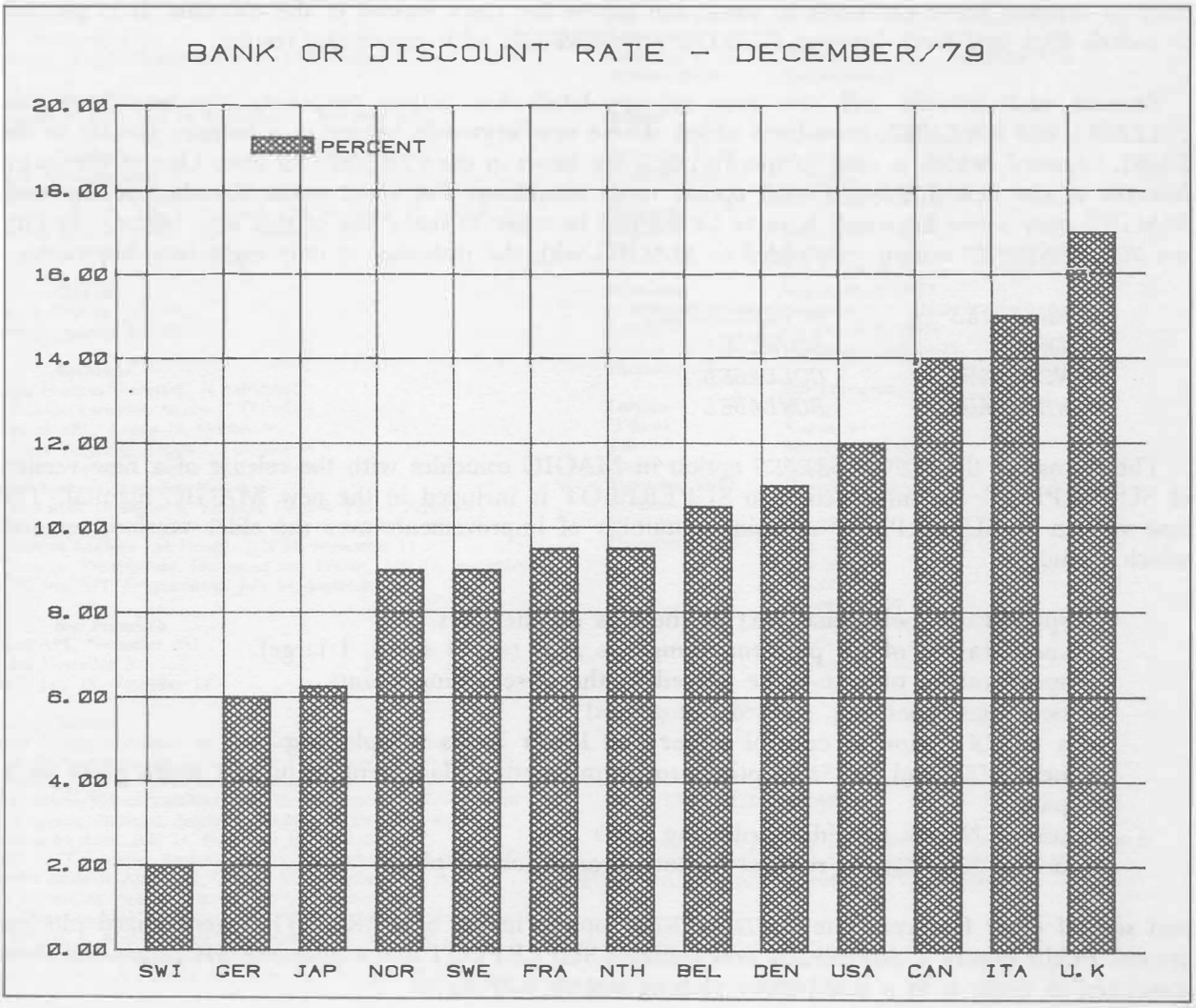
The release of the *NOTIMESERIES* option in MAGIC coincides with the release of a new version of SUPERPLOT. An introduction to SUPERPLOT is included in the new MAGIC manual. The new version of SUPERPLOT contains a number of improvements over the older version, some of which include:

- **specification of actual text at the tiks on the axes**
- **specification of tik patterns along the axes** (e.g. 4 small, 1 large)
- **specification of text to be placed at the observation points**
- **new line types** (e.g. stacked histograms)
- **a *RANGE* option to control upper and lower limits for plotting**
- **new *SIZE* and *OFFSET* options to permit better placement of one or more plots on a page**
- **use of N-task to reduce plotting costs**
- **use of *GRAFREQ* to request remote production of plots**

and several other features. The *NOTIMESERIES* option makes SUPERPLOT a generalized plotting system. Public library 3 *SUPERPLOT* now contains SUPERPLOT and a little MAGIC, such that those interested in using it as a stand-alone plotting system may do so.

The following example shows SUPERPLOT used in conjunction with *NOTIMESERIES*, again using IFS data. This example uses the non-conversational system *ΔSUPERPLOT* to set the plot parameters. Less experienced users would likely use the conversational *SUPERPLOT* method to achieve the same results.

```
CLEAR
NOTIMESERIES
COLWISE
MONTHLY,DATED AT 12 79
TITLE 'BANK OR DISCOUNT RATE - DECEMBER/79'
CODES←'USA,CAN,JAP,BEL,DEN,FRA,GER,ITA,NTH,NOR,SWE,SWI,U.K'
ROWLABEL CODES
COLLABEL 'PERCENT'
ΔSUPERPLOT 'TERM,HP/STYLE,SOLID/TYPE,BAR/XTIK,0/YTIK,2 1'
ΔSUPERPLOT 'SHADING,1,BOTTOM,45,5/2,BOTTOM,135,5'
ΔSUPERPLOT 'FONT,TITLE,1.5/RANGE,0 20/SIZE,9 7.5'
PLOT SORT IFS CODES,'/60'
```



ACCESS TO SHARP APL

Ian Sharp

If you look at the picture of the Network Topology in this and other issues of the newsletter, you will notice that there are about 100 nodes in the Sharp network. Not 100 cities, because some cities have lots of nodes. In addition we have interfaced our network to Telenet, Tymnet, Telex and Datapac. We will in the future interface our network to other commercial or private networks as the need arises. Telenet and Tymnet are classed as Value Added Networks, and both companies operate under the regulatory authority of the F.C.C. Both companies have been successful in selling their technology to the International Record Carriers and to the individual PTT's. However, access to the Telenet and Tymnet networks is controlled by the local PTT and the user is obliged to sign a contract with the PTT if he wishes to obtain access to either network.

Thus, to the question "Does I.P. Sharp provide access from Hong Kong?" the answer is "Yes, but a properly domiciled organization (i.e. a local subsidiary/affiliate/agent, etc.) would have to sign a contract with Cable and Wireless (who run the Hong Kong telephone system), and then you have access to the U.S. domestic networks of Tymnet or Telenet, both of which are connected to the Sharp network."

The charges made by the local PTT's for access to the Value Added Networks vary considerably. They are usually in the form of a connect charge and a character charge. The character charge is sometimes on a segment or packet basis, and it's not easy to translate this into a rate per hour. For instance, in a recent experiment with the British Post Office IPSS, we counted 2000 characters transmitted, whereas IPSS reported this as 6000 characters. Both were, of course, correct. We were reporting the traffic in and out of our mainframe, while IPSS was reporting all the bits and pieces they added (and subsequently subtracted) in order to transmit it.

We will, in future, on the back page of each newsletter report the places in the world where you can, if you wish, contract with the local PTT for access to the Value Added Networks, and hence to our system. We will not include locations served by our own network, since these are listed separately on the back page.

NEWS FOR ENERGY DATA BASE USERS

Jennifer May, Toronto

121 *IMPORTS* and 121 *PETROSERIES* now support a news system. This feature has been designed to keep you informed of enhancements to each workspace, and to inform you of additions or modifications to the data base directories or time series.

News items will be presented in reverse chronological order. To find out the latest, type *NEWS*. Help is available on-line.

COMMUNICATIONS NETWORK IN EUROPE

The Amsterdam office of our Dutch company, Intersystems B.V., has recently moved to new accommodation on the outskirts of the city from somewhat old premises in the centre of Amsterdam. This necessitated the transfer of the corporate communications facilities whilst maintaining service to clients in the Netherlands and users in countries whose data is routed via Amsterdam.

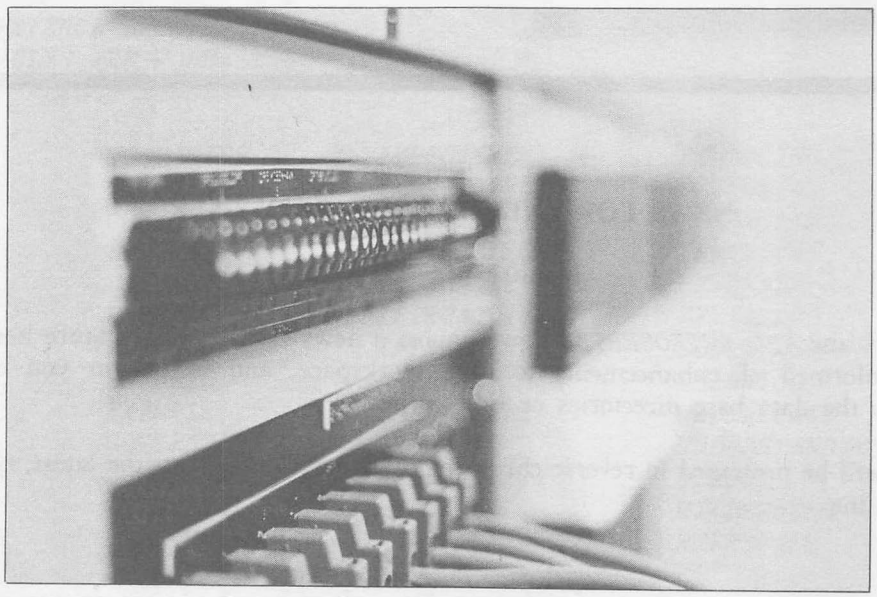
The opportunity was taken to rebuild the equipment as a Production Communication Centre. A cross-town high quality private data circuit was ordered and commissioned to smooth the transition. A second Amsterdam node was installed in the new communications centre to terminate this circuit. The Telex interface to the I.P. Sharp Network was transferred first, followed shortly by the local dial up access. Finally, on the 18th of April, five international circuits and associated modems were transferred and working — within 75 minutes — at 1915 local time.

Earlier in the same week, on April 14th in Paris, the Milan, London and standby Zurich circuits were transferred from their old site to our new office in Tour Neptune.

The net result is increased backup for our clients in mainland Europe, who are normally served by two cross-channel routes to London. All clients can now be served by either one of these routes in the event of a PTT failure. Furthermore, facilities now exist in Amsterdam for a second line backup which allows a limited service via London, should both cross-channel routes fail simultaneously.

Power backup at the London Communications Centre was installed to help us provide our clients with high integrity communications. At the close of 1979 an automatic mains-failure diesel generator was installed and commissioned at Buckingham Palace Road. This set is capable of powering all the ten racks of equipment in the London communications centre. The area around the London office is of historic interest and environmental considerations led to an expenditure on an acoustic canopy for the generator, approximately equalling the cost of the set.

Finally, on the personnel side, **Geoff Oxer** transferred from London to the newly formed Communications Department in Amsterdam at the turn of the year.



Technical Supplement–27

A PUZZLE

Eugene McDonnell, Palo Alto

In a 'dead key' puzzle you are supposed to imagine that certain keys on your terminal are not working ('dead'). You are asked to provide an expression giving a certain result which does not use any dead keys. Our puzzle requires you to write an expression which gives the result 1 if the argument is an integer, and 0 otherwise. The keys bearing < ≤ = ≥ > ≠ ∊ ⍳ are dead.

AND ANOTHER

Linda Furrow, Calgary

We all know the two simple rounding algorithms *R*←⌊*X*+.5 and *R*←⌈*X*-.5 which give the same answer, except for the *X*.5 case. How about an algorithm for rounding the .5 case to the nearest **even** integer? Apparently this method is used by some accountants and statisticians to get a 'fairer' distribution for rounding error.

The problem was suggested by students in our introductory APL course taught by Henri Schueler. Henri gave the problem right back to the class as an exercise, and of course we've seen all sorts of solutions—and we've come up with a few interesting solutions among ourselves. Does a 'definitive' solution exist?

One answer, from **Doug Forkes** in Toronto:

```
    ∇R←RND X;T
[1] R←T×⌊.5+X×T←¯1*⌈2|X∇
```

Please contact Linda or Henri if you'd like to suggest another solution.

CONTEST 10

Eugene MacDonnell, Palo Alto

In the problem for this issue you are given a vector *V* and a scalar *K*. The elements of *V* are non-negative numbers. *K* is a positive number. You are asked to produce a vector *N*, of the same length as *V*. The *I*-th element of *N* shows how many consecutive elements of *V*, beginning at *V*[*I*] and going to the right, must be added before a sum at least as large as *K* is reached. For example,

```
      V
2 1 1 0 2 0 1 3 1 0 1 1 2 1
      K
6
      N
5 7 6 5 4 6 5 5 6 6 5 4 3 2
```

The second element of *N* is 7 because you have to add the elements from *V*[2] through *V*[8], seven in all, in order to reach a sum at least equal to 6 (the actual sum reached is 8). Similarly for the other elements of *N*, except for the last 5, where, since the sum 6 can't be reached at all, the values are immaterial. Zeroes would be just as acceptable as the values shown.

As usual, entries will be judged in terms of space used as well as execution time. To submit an entry, ⎕*PACK* your function, with a variable named *AUTHOR* containing your name and address. ⎕*APPEND* this package to file 999 *CONTEST* no later than October 31, 1980. Good luck!

A prize of $50 cash (Canadian) will be awarded for the best non-I.P.Sharp entry, while the best entry from IPSA will receive a book of the author's choice.

Improved Display of Errors Occurring in ⎕*TRAP* Lines

Leslie Goldsmith, Toronto

Effective 24 May 1980, the Sharp APL system has improved the way in which it handles the display of errors occurring in ⎕*TRAP* recovery expressions. The improvements will resolve ambiguities in the display of these errors, and make the way in which the system treats ⎕*TRAP* errors emanating from locked functions more consistent with the way it treats other locked function errors. Because the modifications change the display of non-trappable errors only, they will **not** affect the operation of existing programs.

APL contains five basic mechanisms by which a line of code can be put into execution. These mechanisms are immediate execution, function call, ⍎, ⎕, and ⎕*TRAP*.

In order to distinguish the environment in which an error occurred, the system prefixes some stack information to the error display. In the case of function call, the information consists of the name and line number of the failing function; in the case of immediate execution and ⎕*TRAP*, it consists of the **absence** of a function name and line number. A quad level is represented by a prefix of a single quad symbol. Any of these three forms may be followed by one or more execute symbols, denoting execute levels.

Examples of error displays in this form include:

```
      0 DIV 0
DOMAIN ERROR
DIV[1] Z←A×÷B
           ∧

      0 DIV1 0
DOMAIN ERROR
DIV1[1]⍎⍎ Z←A×÷B
             ∧
```

```
      Z←A×÷B
DOMAIN ERROR
      Z←A×÷B
          ∧

⎕:
      ⍎'Z←A×÷B'
DOMAIN ERROR
⎕⍎    Z←A×÷B
          ∧
```

At present, errors occurring in immediate execution and errors occurring in ⎕*TRAP* recovery expressions display in the same fashion, with no additional information indicating in which environment the error occurred. For example:

```
    ∇ Z←I JOIN J;⎕TRAP
[1]   ⎕TRAP←'∘ 5 11 E ⎕SIGNAL ⍎4⍴' ⍝ TRAPS FOR LENGTH AND DOMAIN
[2]   Z←¯1↓(⍴I)⌈⍴J ◇ Z←((Z,¯1↑1,⍴I)↑I),(Z,¯1↑1,⍴J)↑J
    ∇
      'A' JOIN 3 3 ⍴'ABC' ⍝ TRIGGERS 'LENGTH ERROR' TRAP
SYNTAX ERROR
  ⎕SIGNAL ⍎4⍴
           ∧

  )SI
JOIN[2] *
```

To resolve this problem, Sharp APL will begin to prefix errors occurring in ⎕*TRAP* expressions by the sequence '⎕*TRAP*', rather than by the current six blanks. With the new form of display, the previous error would be reported more meaningfully as illustrated below:

```
      'A' JOIN 3 3 ⍴'ABC'
SYNTAX ERROR
⎕TRAP ⎕SIGNAL ⍎4⍴
           ∧

  ⎕ER
   2 SYNTAX ERROR
⎕TRAP ⎕SIGNAL ⍎4⍴
           ∧
```

The indication that ⎕*TRAP* was at fault also appears in ⎕*ER*.

Like errors occurring in defined functions, ⎕, and immediate execution, errors in ⎕*TRAP* expressions may involve executes. When they do, the appropriate number of execute symbols will appear after the letters '⎕*TRAP*' in the display:

```
      ⎕TRAP←'∘ 0 C ⍎(¯1≠⌶28)/''÷0'''
      * ⍝ INTENTIONAL 'SYNTAX ERROR' TO TRIGGER TRAP
DOMAIN ERROR
⎕TRAP⍎ ÷0
    ∧
```

A second change in the display of ⎕*TRAP* errors concerns locked functions. At present, error display of failing ⎕*TRAP* lines is not cognizant of the fact that the trap line may be associated with a locked function. It is therefore possible to have the ⎕*TRAP* line in error displayed at the terminal, even though the display of errors emanating from either execute or the function itself would have been suppressed.

After the change, the display of errors occurring in ⎕*TRAP* recovery expressions will be suppressed if **both** the level at which the trap expression is localized **and** the level at which the expression is executed are locked. These two levels are always the same for ⎕*TRAP* expressions specifying the cutback action code, *C*. However, for *E*-type expressions, the levels may be different if the error occurred in a function other than the one in which ⎕*TRAP* was localized.

The table below illustrates the display potential of ⎕*TRAP* lines more clearly. In the table, '∇' refers to a level of the state indicator that corresponds to an unlocked program, while '⍢' refers to a level that corresponds to a locked one. Entries marked with a '*Y*' indicate that ⎕*TRAP* errors occurring in the associated environment **will** be displayed: '*N*' indicates the opposite. Entries marked with '-' denote situations that can't arise, since the same level can't be both locked and unlocked.

LEVEL OF ⎕TRAP LOCALIZATION	∇	⍢	∇	⍢
LEVEL OF ⎕TRAP EXECUTION	∇	∇	⍢	⍢
C-TYPE EXPRESSION	Y	-	-	N
E-TYPE EXPRESSION	Y	Y	Y	N

For cutback levels, only the level of localization of ⎕*TRAP* (also the level cut back) affects the display potential of errors in trap lines. For *E*-type levels, where no cutback occurs, the level of execution of the trap expression (also the level at which the initial error occurred) affects the display potential as well.

When display of the failing ⎕*TRAP* expression is suppressed, the error will instead appear as follows:

```
      ∇JOIN⍢

   'A' JOIN 3 3 ρ'ABC'
SYNTAX ERROR
⎕TRAP ⍢
   ∧

   ⎕ER
   2 SYNTAX ERROR
⎕TRAP ⍢
   ∧
```

CANADIAN LEASE EVALUATION SYSTEM

Linda Zetterstrand, Toronto

The lease evaluation system is a comprehensive computer system for Canadian lessors. The package handles several stages of leasing — from pricing prospective transactions through to amortizing placed leases. The system is flexible, allowing its use for both simple and complex leasing transactions. No knowledge of computer programming is required to use the package.

A lease can be analyzed quickly, and the details saved in a file in case further calculations are required. Cashflows, amortization schedules and other reports can be requested easily. The reports can be produced at the terminal or on the nearest I.P. Sharp highspeed printer.

The following can be accommodated by the system:

- up to five different assets per lease
- assets in any CCA class
- various methods of handling CCA
- special CCA allowances for certain assets
- investment tax credit
- varying income tax rates throughout the lease term
- multiple disbursements
- regular or irregular rental payments, including interim payments
- prepaid rents, and deposits on rents
- purchase and/or renewal options during the lease term
- lease 'stretching'

For a full description of how to use the lease evaluation system, please ask for the lease evaluation system manual from your local I.P. Sharp Associates representative.

APL and The Art of Readable Writing

Robert Metzger, Rochester

'The illegible is not plain enough to be deciphered; the unreadable is not interesting enough to be perused.'
H.W.Fowler, Modern English Usage.

Have you ever read a business or government document and wondered if the author spoke the same language you do? Have you ever read a technical manual and become lost in a wilderness of jargon? Have you ever noticed how often Help Wanted ads require "strong oral and written communication skills"? A new workspace in library 4 may be of interest to you.

Workspace 4 *READABILITY* contains programs which compute the Flesch Readability Index of English text. Dr. Rudolf Flesch has written several books on readable writing. Two of them have been in print almost thirty years. They are:

The Art of Readable Writing
The Art of Plain Talk

In these books Dr. Flesch gives guidelines for writing prose that is easy to understand.

Dr. Flesch also describes a rule which computes the relative readability of English text. This new workspace provides an automated means of computing his index.

The index is based on counts of sentences, words, and syllables within the text. He suggests that short sentences composed of short words make the most readable texts.

Using this workspace, input texts can be provided in several forms:
1) *APL* character vectors;
2) Text entered interactively;
3) Text editor files (such as those created with 4 *EDIT*).

The output of the analysis contains:
1) Parameters used to calculate the index;
2) The index value itself;
3) A list of all words in the text having 3 or more syllables, in alphabetical order.

You start by entering your text. Then run the analysis. The index can run from 0 to 100. If the index for your text is less than 50, you may want to do some reworking. Try replacing some of the long words with shorter synonyms. See if you can break up some of the longer sentences. Go over Flesch's guidelines and see if you can make any other improvements. After you have made your changes, run the analysis again to see the improvement. Your readers will appreciate your extra effort.

There are many applications for this tool. Some governments and agencies require that businesses like banks and insurance companies write "easy-to-read" documents. Manuals and instructions for consumer products can often be improved. Even legal contracts can be made understandable to the layman.

An example of the output of this tool is given below. It is the analysis of this article.

```
      NUMBER OF SENTENCES= 42
          NUMBER OF WORDS= 434
      NUMBER OF SYLLABLES= 675
   AVERAGE SENTENCE LENGTH= 10.3
AVERAGE SYLLABLES PER WORD= 1.6
              FLESCH INDEX= 61
```

AGENCIES	*COMPANIES*	*IMPROVEMENT*	*REPLACING*
ALPHABETICAL	*COMPUTING*	*IMPROVEMENTS*	*REWORKING*
ANALYSIS	*CONSUMER*	*IMPROVING*	*ROCHESTER*
APPLICATIONS	*DOCUMENT*	*INSTRUCTIONS*	*SENTENCES*
APPRECIATE	*DOCUMENTATION*	*INSURANCE*	*SEVERAL*
ARTICLE	*DOCUMENTS*	*INTERACTIVELY*	*SYLLABLES*
AUTOMATED	*EDITOR*	*INTEREST*	*SYNONYMS*
BOOKSTORES	*ENTERED*	*LIBRARY*	*TECHNICAL*
BUSINESS	*EXAMPLE*	*PARAMETERS*	*UNDERSTAND*
BUSINESSES	*GOVERNMENT*	*PROVIDED*	*UNDERSTANDABLE*
CALCULATE	*GOVERNMENTS*	*READABILITY*	*USEFUL*
CHARACTER	*GUIDELINES*	*READABLE*	*WILDERNESS*
COMMUNICATION	*IMPROVED*	*RELATIVE*	*WORKSPACE*

Further documentation may be found in the workspace. We hope that you will find this tool useful in improving the readability of the documents you write.

EURO IV — Fourth European Congress on Operations Research

James Sinclair, London

The European O.R. analysts among you will already know all about this: the congress invades Cambridge University, England, from July 22 to 25. Those attending are invited to visit the I.P. Sharp Associates stand on the second floor of the Mill Lane lecture block.

The conference is organised in conjunction with IFOR - the International Federation of O.R. Societies. There are fifteen streams covering various aspects of O.R. ranging from transport problems to O.R. in education. Included in the programme is our presentation of computerised O.R. applications. The exhibition is attached to the conference in the same building.

We have attended, as exhibitors, the three previous UK Operational Research Society conferences (respectively at Oxford, York and Stirling Universities). The conference provides an excellent opportunity to meet O.R. analysts who have so many applications suitable for Sharp APL, and to introduce the language to them. EURO IV is drawing delegates from a wide range of countries and should be a much larger conference, with correspondingly larger opportunities to 'spread the word'. We'll include a report in the next issue.

The Cambridge setting is obviously attractive in itself; indeed, we expect the main competition will be the proximity of punts less than one hundred yards away - and the Cambridge Real Ale Festival which runs concurrently!

APPLICATIONS LIBRARY UPDATE

Applications library programs, in workspaces 1 through 499, are updated regularly. Please make a note of the following changes and additions which reflect the most significant changes in the library since January of this year.

NEW

1 *APL81*..... A new workspace which helps with the input and distribution of papers for the APL81 conference in San Francisco, October 1981.

3 *SUPERPLOT*..... See page 3.

4 *READABILITY*.... See page 7.

45 *GPSS*..... A new, General Purpose System Simulator in APL.

86 *MAXPAK*..... Formerly 86 *INSPECTOR*:
Microfilm Access Package — see the article "MAX-PAK" in the January/February 1980 newsletter. Note that workspace 86 *MAXPAK* is the APL version — MAX-PAK also comes in a non-APL version.

CHANGED

1 *WSFNS*..... Now includes a new function *TERMINAL* to provide the same services as the)*TERM* system command.

51 (all workspaces) The *FP* access functions have been speeded up.

56 *LOAN*..... Significant speedups have been achieved to functions *LN* and *CM*.

121 *IMPORTS*..... News feature added — see page 5.

121 *PETROSERIES*.... News feature added — see page 5.

GONE

86 *INSPECTOR*..... Replaced by 86 *MAXPAK*.

NEW BRANCH MANAGER

SEATTLE

Jennifer Morgan, who joined I.P. Sharp in 1978, was appointed branch manager of the Seattle office from June 1, 1980. An honors student in mathematics in high school, she earned an undergraduate degree in history from UCLA, and has done graduate work in management, public administration, communications, and history.

Before she joined I.P. Sharp, Jennifer was associated with Microcomputer Concepts, Inc. in Mercer Island, Washington. Prior to that, she worked at UCLA as a counselor with international students in the reading and studies skills center, as coordinator for orientation, and as administrative assistant in the counseling center.

COURSE SCHEDULE

SEMINARS and SPECIAL COURSES

Aberdeen
Appreciation of APL, April 8, October 16, December 5

Coventry
Appreciation of APL, August 1, October 17, December 4

Gloucester
Appreciation of APL, July 14, September 8, November 10

London
Advanced APL, September 4
APL Review, July 28, August 20, September 15, October 20, November 24
Appreciation of APL, July 15, September 22, November 17, January 9
Introduction to using SNAP, July 3, September 29
Advanced SNAP, October 30, January 29

Ottawa
Highspeed Printing, July 24
Regression Analysis, July 22

Rochester
Advanced Features Workshop, (4 half-days):
- Package Variables, August 7, October 2
- Batch APL, August 14, October 9
- Event Trapping, August 21, October 16
- Shared Variables, August 28, October 23

Advanced Methods Workshop (full days):
- Interactive Dialogues & Terminal Control, July 3, September 3
- Data Structures and File Design, July 10, September 4
- Systems Analysis and Design, July 16, September 11
- Program Development, Debugging and Testing, July 17, September 18
- Efficient APL Programming, July 24, September 25

San Francisco
Advanced APL, September 25
Graphics, November 5
MAGIC, July 18, November 12

Toronto
Advanced Coding Techniques for Actuarial Appl., (2 days) August 5-6
APL for Managers, August 7, September 18, October 23, December 10
Box-Jenkins, July 10, September 16, November 13
Data Structures/Shared Variables, July 15, September 17, November 20
Event Trapping, (halfday), August 11, October 8, December 4
Forecasting Methods, July 11, September 16, November 14
MAGIC for Time Series Analysis, August 12, October 9, December 12
Regression Analysis, August 14, October 17, December 19
Report Formatting, July 25, September 29, November 18
Saving Money with N- and B-tasks, August 13, October 10, December 18
SUPERPLOT & MAGIC, July 25, September 29, November 18
Text Editing,(2 days) August 21-22, November 4-5
The Sharp System: A Practical Approach, July 7-9, July 28-30, August 18-20

Warrington
Appreciation of APL, July 21, September 9, November 6

INTRODUCTION TO APL

Aberdeen
(3 days)
July 16-18
September 1-3
November 12-14
January 26-28

Atlanta
(5 day)
September 15-19
December 8-12

Coventry
(3 day)
July 22-24

Gloucester
(3 day)
August 4-6
October 13-15
December 1-3

London
(3 days)
July 7-9
August 11-13
September 10-12
October 1-3
November 3-5
December 3-5

Montreal
(English)
July 15-17

Ottawa
(programmers)
July 8-10

Paris
(3 jours, francais)
Sept. 3-5

Rochester
(6 day)
July 21-23/28-30
August 18-20/25-27
September 15-17/22-24
October 20-22/27-29
November 17-19/24-26

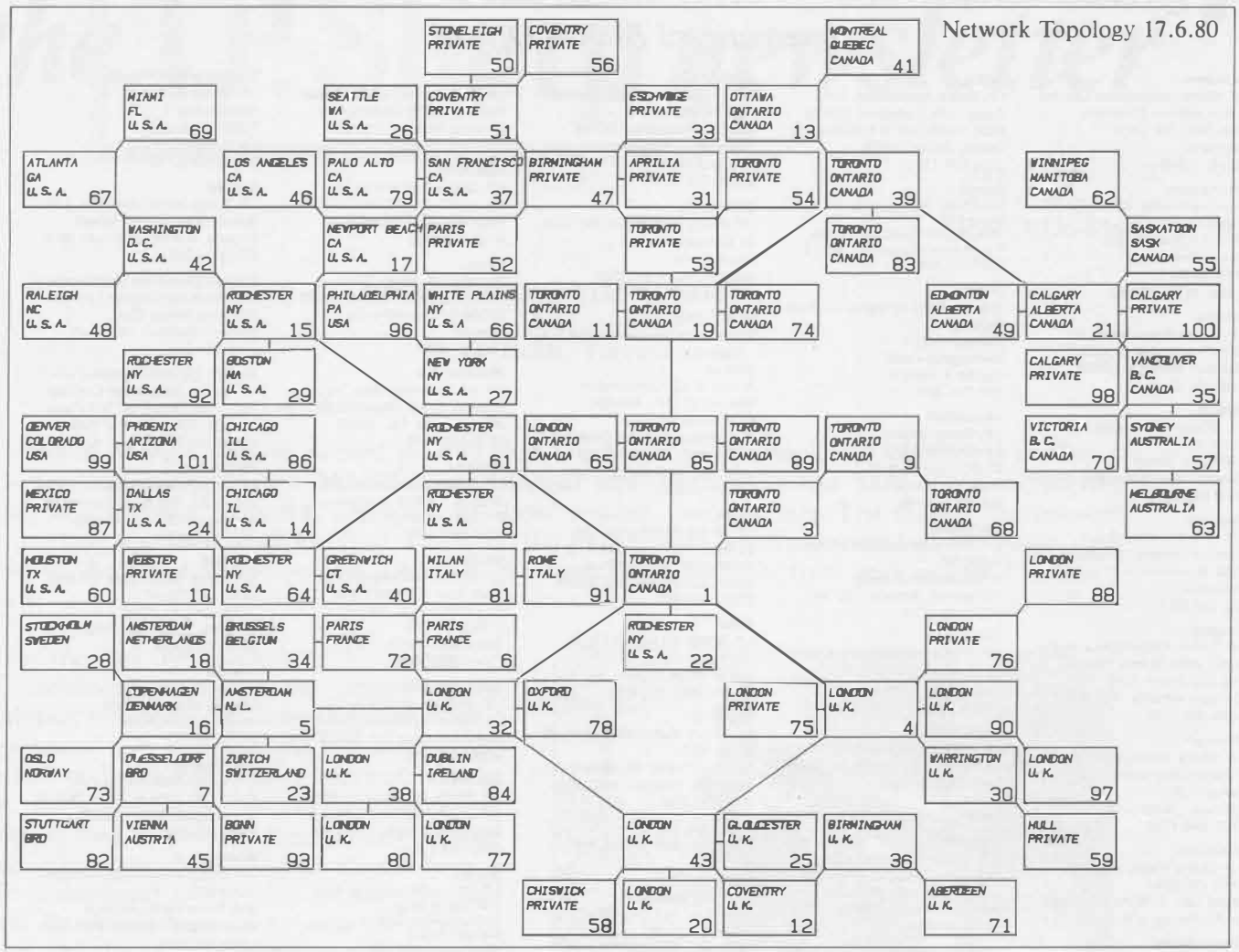
San Francisco
(3 day)
August 5-7
September 16-18
October 28-30
December 9-11

Toronto
July 7-9
July 28-30
August 18-20
September 8-10
September 22-24
October 14-16
November 10-12
December 15-17

Warrinton
(3 day)
August 27-29
October 27-29
December 8-10

INTERMEDIATE APL

London, July 29, August 21, September 16, October 21, November 25
Rochester, (4 days) August 4,5,11,12 and October 6,7,14,15
Toronto, July 21-23, September 2-4, October 20-22



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Jeanne Gershater, *Editor*
Ginger Kahn, *Assistant Editor*

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I.P. Sharp Associates **Head Office:** 145 King Street West, Toronto, Canada M5H 1J8 (416) 364-5361

International Branch Offices

Aberdeen
I.P. Sharp Associates Limited
5 Bon Accord Crescent
Aberdeen AB 12DH
Scotland
(0224) 25298

Amsterdam
Intersystems B.V.
Kabelweg 47
1014 BA Amsterdam
The Netherlands
(020) 86 80 11
Telex: 18795 ITS NL

Atlanta
I.P. Sharp Associates, Inc.
5000 Snapfinger Woods Dr.
Decatur, Georgia 30035
(404) 987-2301

Boston
I.P. Sharp Associates, Inc.
Suite 415
148 State Street
Boston, Massachusetts 02109
(617) 523-2506

Brussels
I.P. Sharp Europe S.A.
Avenue General de Gaulle, 39
1050 Bruxelles
Belgique
(02) 649 99 77

Calgary
I.P. Sharp Associates Limited
Suite 2660, Scotia Centre
700-2nd Street S.W.
Calgary, Alberta T2P 2W2
(403) 265-7730

Chicago
I.P. Sharp Associates, Inc.
2 North Riverside Plaza
Suite 1736
Chicago, Illinois 60606
(312) 648-1730

Cleveland
I.P. Sharp Associates, Inc.
(216) 431-6861
(local call, switched through to Rochester office.)

Copenhagen
I.P. Sharp ApS
Østergade 24B
1100 Copenhagen K
Denmark
(01) 11 24 34

Coventry
I.P. Sharp Associates Limited
7th Floor B Block
Coventry Point, Market Way
Coventry, England CV1 1EA
(0203) 21486/7

Dallas
I.P. Sharp Associates, Inc.
Suite 1148, Campbell Centre
8350 Northcentral Expressway
Dallas, Texas 75206
(214) 369-1131

Denver
I.P. Sharp Associates, Inc.
Suite 416
5680 South Syracuse Circle
Englewood, Colorado 80111
(303) 741-4404

Dublin
Gamma Data Systems Limited
(Agent)
Dollard House
Wellington Quay
Dublin 2, Ireland
(01) 711 877

Düsseldorf
I.P. Sharp GmbH
Leostrasse 62A
4000 Düsseldorf 11
West Germany
(0211) 57 50 16

Edmonton
I.P. Sharp Associates Limited
Suite 505
10065 Jasper Avenue
Edmonton, Alberta T5J 3B1
(403) 428-6744

Gloucester
I.P. Sharp Associates Limited
29 Northgate Street
Gloucester, England
(0452) 28106

Hamilton
I.P. Sharp Associates Limited
Suite 308, 237 Locke St. South
Hamilton, Ontario
L8P 4T4
(416) 527-3801

Houston
I.P. Sharp Associates, Inc.
Suite 925, One Corporate Square
2600 Southwest Freeway
Houston, Texas 77098
(713) 526-5275

London, Canada
I.P. Sharp Associates Limited
Suite 510, 220 Dundas Street
London, Ontario N6A 1H3
(519) 434-2426

London, England
I.P. Sharp Associates Limited
132 Buckingham Palace Road
London SW1W 9SA
England
(01) 730-0361

Manchester
I.P. Sharp Associates Limited
Paul House
89-91 Buttermarket Street
Warrington, Cheshire
England WA1 2NL
(0925) 50413/4

Melbourne
I.P. Sharp Associates Pty. Ltd.
36 Elizabeth Street
South Yarra
Victoria, Australia 3141
(03) 244-417

Mexico City
Teleinformatica de Mexico S.A.
(Agent)
Mail to:
Arenal N 40, Chimalistac
Mexico 20 D.F., Mexico
Shipments to:
A/C Despachos del Centro S.A.
Aeropuerto Internacional de la
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(905) 550-8033

Miami
I.P. Sharp Associates, Inc.
Suite D, Kennedy Building
14560 N.W. 60th Avenue
Miami Lakes, Florida 33014
(305) 556-0577

Milan
I.P. Sharp Srl (agent I.S.I.)
Via Eustachi 11
20129 Milan, Italy
(2) 271 6541/221 612

Montreal
I.P. Sharp Associates Limited
Suite 1610
555 Dorchester Boulevard W.
Montreal, Quebec H2Z 1B1
(514) 866-4981

New York City
I.P. Sharp Associates, Inc.
Mail to:
Suite 2004
200 Park Avenue
New York, N.Y. 10166
Also at:
Suite 242, East. Mezz.
(212) 557-1200

Newport Beach
I.P. Sharp Associates, Inc.
Suite 1135
610 Newport Center Drive
Newport Beach, Ca. 92660
(714) 644-5112

Oslo
I.P. Sharp A/S
Dronningens gate 34,
486 Sentrum
OSLO 1, Norway
(02) 41 17 04

Ottawa
I.P. Sharp Associates Limited
Suite 600, 265 Carling Ave.
Ottawa, Ontario K1S 2E1
(613) 236-9942

Palo Alto
I.P. Sharp Associates, Inc.
Suite 201, 220 California Ave.
Palo Alto, Ca. 94306
(415) 327-1700

Paris
Société I.P. Sharp SARL
Tour Neptune - Cedex No.20
92086 Paris-la-defense
France
(1) 773 57 77

Philadelphia
I.P. Sharp Associates, Inc.
Suite 604, 437 Chestnut St.
Philadelphia, Pa. 19106
(215) 925-8010

Phoenix
I.P. Sharp Associates, Inc.
3033 N. Central Avenue
Phoenix, Arizona 85012
(602) 264-6819

Rochester
I.P. Sharp Associates, Inc.
1200 First Federal Plaza
Rochester, N.Y. 14614
(716) 546-7270
Telex: 0097 8473
0097 8474

San Francisco
I.P. Sharp Associates, Inc.
Suite C-415, 900 North Point St.
San Francisco, Ca. 94109
(415) 673-4930

Saskatoon
I.P. Sharp Associates Limited
Suite 208, 135 21st Street E.
Saskatoon, Sask. S7K 0B4
(306) 664-4480

Seattle
I.P. Sharp Associates, Inc.
310 Globe Bldg.,
9725 SE 36th Street
Mercer Island
Washington 98040
(206) 453-1661

Stockholm
I.P. Sharp AB
Kungsgatan 65
S111 22 Stockholm, Sweden
(08) 21 10 19

Stuttgart/Boeblingen
I.P. Sharp GmbH
Schafgasse 3
7030 Boeblingen
West Germany
(070 31) 2 30 14

Sydney
I.P. Sharp Associates Pty. Ltd.
Suite 1342, 175 Pitt Street
Sydney, N.S.W., Australia 2000
(02) 232-6366

Toronto (Corporate Headquarters)
I.P. Sharp Associates Limited
145 King Street West
Toronto, Ontario M5H 1J8
(416) 364-5361

Toronto (Special Systems Div.)
I.P. Sharp Associates Limited
156 Front Street W., 5th Floor
Toronto, Ontario M5J 1G6
(416) 364-5361

Vancouver
I.P. Sharp Associates Limited
Suite 902, 700 West Pender St.
Vancouver, B.C. V6C 1G8
(604) 687-8991

Victoria
I.P. Sharp Associates Limited
Chancery Court
1218 Langley Street
Victoria, B.C. V8W 1W2
(604) 388-6365

Vienna
I.P. Sharp Ges.mbH
Rechte Wienzeile 5/3
1040 Wien, Austria
(222) 576 571

Washington
I.P. Sharp Associates, Inc.
Suite 400, 1835 K Street N.W.
Washington, D.C. 20006
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Winnipeg
I.P. Sharp Associates Limited
Suite 208
213 Notre Dame Avenue
Winnipeg, Manitoba R3B 1N3
(204) 947-1241

Zurich
I.P. Sharp A.G.
Badenerstrasse 141
8004 Zurich
Switzerland
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