the I.P. Sharp *newsletter*

This historic photograph was taken in the hospitality suite at the recent APL users meeting. From left to right the individuals are **Dick Lathwell, Ken Iverson, Roger Moore, Adin Falkoff, Phil Abrams** and **Larry Breed**. It is believed to be the first time that all six "originators of APL" have been in the same place at the same time, it is probably the first time that all six have worn jackets and ties simultaneously and the first time that Ken and Adin have been observed to smile simultaneously.

IN THIS ISSUE

THE SEPTEMBER MEETING

The APL Users Meeting held in mid-September was generally acknowledged to be successful. We enjoyed it, and most of the 500 or so attendees appeared to enjoy it too.

The next one will be held in 1980 at the same location, the Hotel Toronto, from October 6th to 8th. The details won't be announced for another year or so, but we intend to make a few changes to the format of the technical sessions.

Some of the sessions were outstanding and probably the one which generated the most post-conference comment was the one on In-house Migrations. Our sincere thanks to Dick Lathwell for organizing it, and to Roger Wilson of Xerox and Maurice Elliott of Massey Ferguson for their papers.

The individual star was undoubtedly Don McIntyre who gave two papers. In content and presentation they were too good to be adequately described. We hope he will be back in 1980.

The hospitality suite was well patronized and the final bar bill indicates quite clearly that the average APL user, given the opportunity, drinks a lot.

On the technical front, mention was made of some upcoming new things. There will be support for bisynchronous terminals throughout the network. No delivery date was promised but testing of this new facility is already underway. We are undertaking an implementation of generalized arrays with a target availability date of early next year. Shared variables are well underway and should be available soon.

APL service will be available around the clock on weekdays. Techniques have been developed for carrying out backup of workspaces and files on the fly. This should be good news for our Australian users who up to now have experienced service interruptions in mid-afternoon during back-up procedures.

We should give credit to the people who worked long and hard to make the conference a success: Rosanne Wild, the conference coordinator, was also in charge of the local arrangements committee, the proceedings committee, acted as treasurer, and arranged the displays. Many thanks also to those who worked with Rosanne before and during the conference to produce the proceedings on time in typeset format, to set up and run the sessions, registration, the graphics demonstration and the hospitality suites.

Copies of the proceedings cost $15.00 and are available from your local I.P. Sharp Associates office, or from Rosanne Wild.

TELEX

Last month we announced that the Sharp Communications network has been extended by means of an interface with the international Telex network. Multi-national customers are already using Telex access to enter data directly from their branches in South America, Africa and India. The first connection was made via Amsterdam (18859 ITS NL), and the second access point in Rochester, N.Y. is now operational (97-8380).

Correction

Please accept our apology for incorrectly specifying the list of available special characters on Telex. All users will have the special characters: . , : ← → + ‾ ( ) ? and some users will also have $, ⎕ and -.

CASA LOMA

During the APL Users Meeting in September, demonstrations of the Sharp APL Graphics package were run in the "graphics suite", and a steady stream of interested users came by. The picture on the colour insert was produced on an HP7221A as part of the demonstration. So many people wanted a copy to take home that we are including a printed version in this newsletter.
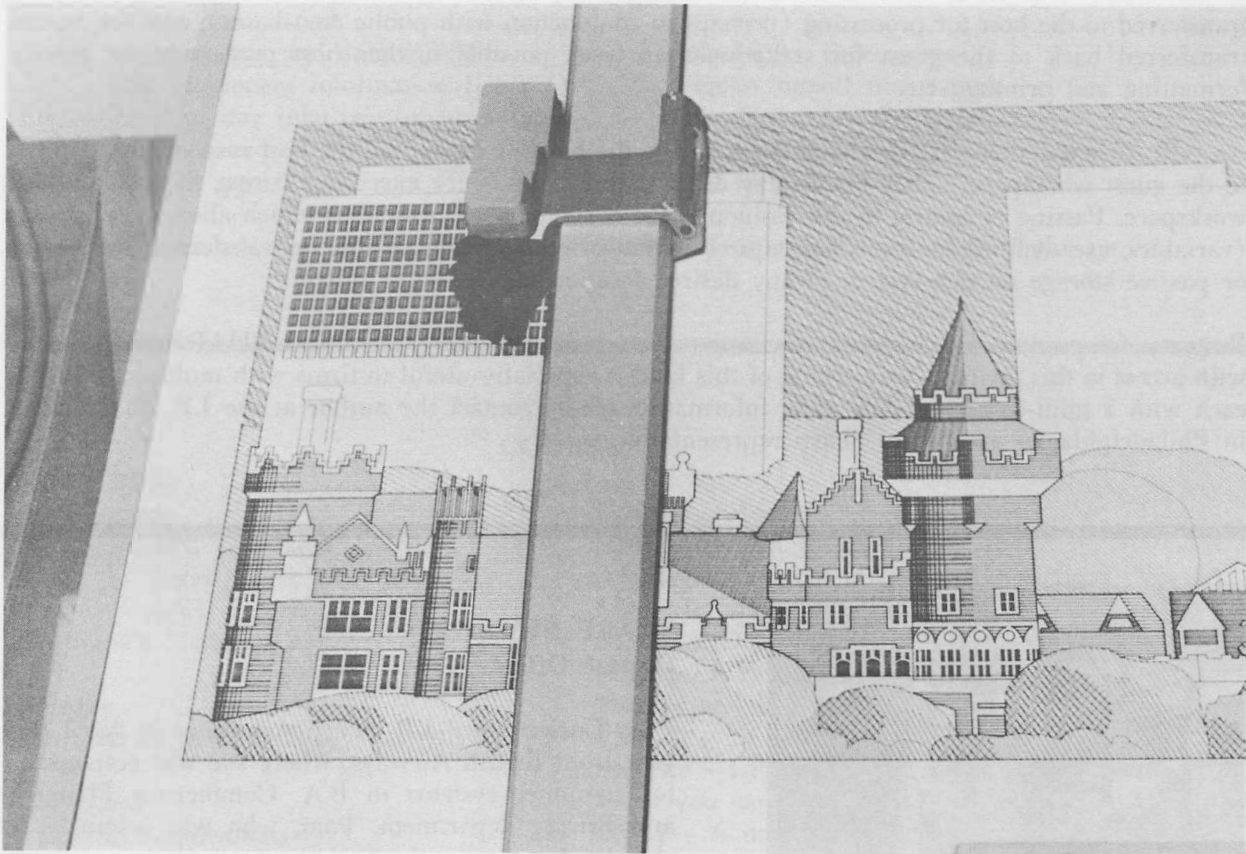
The picture is derived from an original painting (1975 to 1977), by Peter Wooster, done in egg-tempera - a well-known pre-Renaissance graphic technique - and shows Toronto's Casa Loma as viewed from the 23rd floor of an apartment building a few blocks to the south.

The outline was entered by hand using a modified version of 3 *GREDIT*, on a Tektronix 4015. The finer details, including shading, foliage and small windows, were filled in using functions in the same workspace.

The completed picture is on a demonstration file, and can be re-drawn on an HP7221A in four colours. More information on the graphics workspaces is available in the manual "SHARP APL Graphics".

GUEST PROCESSING WITH APL

David Steinbrook, Philadelphia

An IBM5100 or IBM5110 computer with APL and equipped with the serial I/O adapter feature may now sign on to the SHARP APL system as an intelligent terminal. Two APL workspaces, one on the 51X0 (guest processor), one on the Sharp system (host processor), are concurrently active. The interface between the two may be either ASCII or EBCDIC.

The use of "Standard APL" (see IBM manual GS26-3847-3) makes the 51X0 an excellent "common language" machine. APL functions which cooperate in the two workspaces take advantage of aspects of small and large APL systems. Data (including code) entered on the guest, for instance, may be transferred to the host for processing (perhaps in conjunction with public data-bases), and the results transferred back to the guest for subsequent analysis, possible further host processing, or merely formatting and printing, etc.

An APL expression entered on the guest is sent to the host for execution; the host response is returned to the guest workspace, either for display or, if preceded by ⊃, for execution (using ⍎), in the guest workspace. Passing of control in this fashion is the basis for a set of options which allow APL objects (variables, user-defined functions), groups of objects, or entire workspaces to be transferred from active or passive storage on one system to any desired location on the other system.

Requests for processing on a guest system may be submitted by any user of the SHARP APL system with access to this facility. Networking of this kind is especially useful to firms with multiple branches each with a mini-computer. For more information please contact the author at the I.P. Sharp office in Philadelphia, or your local Sharp representative.

SHARP NEWS
Brussels Office

Pam Cocks joined I.P. Sharp Associates in April this year from British Airways, where she was responsible for computer systems in B.A. Commercial Planning and Pricing department. Pam, who was originally a chemist, has previously worked in operational research and airline schedules planning, and has published papers in both European and U.S. journals.

Since joining Sharp Pam has been learning three languages: French, APL and Canadian, and claims that for a Lincolnshire lass the easiest is APL.

Rochester - office moved to:
1200 First Federal Plaza,
Rochester, N.Y. 14614
(716) 546-7270 (unchanged)
Telex 97-8380

Minneapolis
New telephone:
(612) 370-0885

Edmonton
Joan C. Barichello has joined this office to help with APL customer support. Joan is a graduate of the University of Calgary.

ACTUARIAL PACKAGE

$$A_x \quad C_x \quad T_x \quad {}_tP_x \quad {}_{t|}\ddot{a}_x^{(m)} \quad {}_tk_x$$

Jerry Cudeck

The long-awaited user manual for **ACTPAK**, the SHARP APL Actuarial Package, has finally arrived. This software package, located in workspace 123 *ACT*, provides an effective means of evaluating most of the life contingency and compound interest functions that are likely to be encountered in routine actuarial calculations. An easily remembered linear format of the traditional actuarial notation has been embodied throughout by all of the ACTPAK functions. Thus, once the actuarial workspace has been loaded, ACTPAK becomes as easy to use as **1-2-3**.

1. INITIALIZE: the user specifies a set of initializing assumptions which serve as the basis for subsequent actuarial calculations.

2. RETRIEVE: desired programs are then brought into the workspace by means of a simple *GET* command.

3. EXECUTE: the retrieved programs can then be executed subject to the previously set assumptions.

Structurally, ACTPAK is composed of the following workspace and files:

Workspace 123 *ACT*: contains the utility functions necessary to initialize a session with AC-TPAK.

File 123 *ACTFNS*: contains life contingency functions and compound interest functions applicable to annuities and insurance. A full listing of these functions appears in the Index.

File 123 *MORTABS*: contains over 130 mortality tables and projection scales. The entire set of tables currently supported at this writing will be found in the Appendix.

The manual contains a comprehensive discussion of the initialization and retrieval processes, followed by a detailed description of each of the over 200 functions which comprise the body of the SHARP APL Actuarial Package. The function descriptions have been arranged to allow for easy understanding and use on an individual basis. There is a single function on each page, with all the information needed for its complete and proper use. The format of this information is identical for each function and includes:

(1) prominently displayed actuarial symbols for each ACTPAK function which has an equivalent form in International Actuarial Notation.

(2) a verbal description of the ACTPAK function given in precise actuarial terminology.

(3) an indication of the function's location; i.e., either in workspace 123 *ACT* or in file 123 *ACTFNS*, and if the latter, then a statement of the group or groups of functions to which the function under discussion belongs.

(4) the function syntax and required arguments.

(5) special notes where applicable.

(6) most importantly, at least one illustrative example.

For more information about the ACTPAK, or a copy of the user manual, see your local I.P. Sharp representative.

HYBRID - SOLVING CONTINUOUS SYSTEMS

Every Picture Tells a Story   John Craig, Aberdeen

A weight oscillating under the influence of a spring, the motion of a craft in space, the economy of a country: each one of these systems can be represented by differential equations. Solving differential equations is a useful method for designing, modelling, testing and forecasting the behaviour of many different systems.

For years, analogue computers have been used to give a graphical solution to differential equations. Analogue computers, though, tend to be large and expensive and so esoteric as to frighten off even the most hardened digital computer user. 27 *HYBRID* is a recent addition to the SHARP APL applications libraries which simulates a hybrid system - one that uses both analogue and digital computation.

The workspace contains a set of simple commands in English which are easy to learn and use. No previous knowledge of analogue computing, or even of APL, is required. A single differential equation or a set of simultaneous differential equations can be solved. Their solutions are plotted on a graph and printed as a table of values.

An example from the demonstrations available on-line simulates the motion of a bouncing ball dropped from a height of 100 feet, i.e. $x(0)$. The coefficient of restitution **a** between the ball and level ground is, say, .75 ($0 \leq a \leq 1$). The motion of the ball is defined by the equations for acceleration, $x'' = -g$ and velocity, $x'(return) = -ax'(impact)$. A flow diagram is translated into an analogue program, the APL function *BALLA*. A digital function *BALLD* forms a two-way interface between APL and the active analogue program, allowing control of the operations and computation, and generates output.
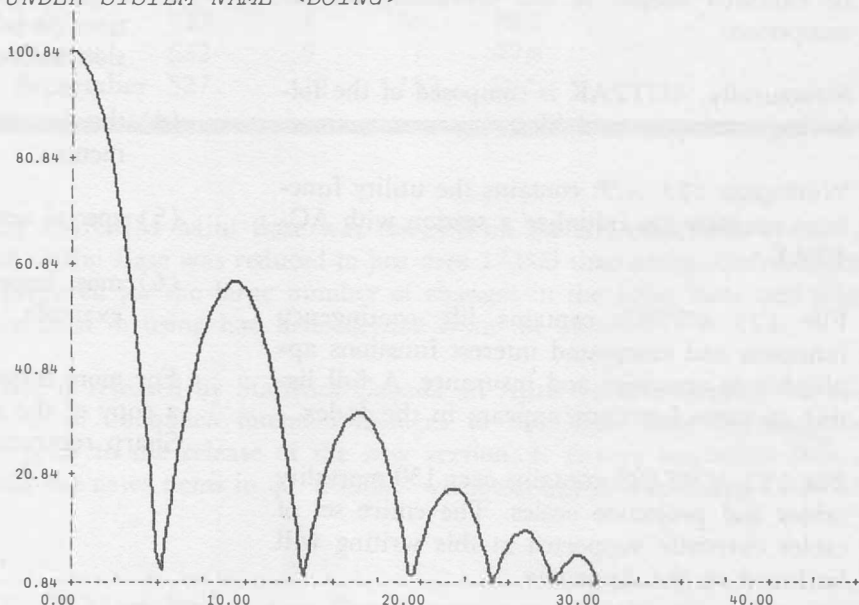
The session would proceed as follows:

```
      GET 'BOING'
<BALLA BALLD> RETRIEVED UNDER SYSTEM NAME <BOING>
      BALLA
<BALLA> ACTIVE
      BALLD
X[0]?
[]:
      100
COEFF. OF RESTITUTION ?
[]:
      .75

      TERM 'AJ832'
      LINEPLOT
      XAXIS TIME
      YAXIS DEVICE 2
      GRAPH
```


A full, detailed description of the workspace and its use is available from your local I.P. Sharp representative.

NEW AVIATION DATA BASES

INS   Lib Gibson, Toronto

The INS data base has been implemented by I. P. Sharp Associates. The data consists of passenger traffic on all flights originating or terminating in the United States. The total traffic for all carriers of a common flag can be determined, and the traffic is further split into commercial scheduled, commercial charter and military flights. In addition, a distinction can be made between passengers who are or are not U.S. citizens.

This data base is freely available to all SHARP APL users; the software for its use resides in the workspace 702 *INS*. So, to get started, simply type:

```
)LOAD 702 INS
```

Since INS is completely compatible with MAGIC and all the Sharp Aviation data bases, the user can proceed with retrieval, tabulation, analysis and plotting, as illustrated below.

Suppose we wish to plot the percentage of total commercial traffic which is charter between the U.S. and the United Kingdom. We would proceed as follows:

```
MONTHLY,DATED 1 75 TO 8 78
TITLE 'PERCENTAGE OF PASSENGERS FLYING CHARTER'
TITLE 'BETWEEN U.S. AND UNITED KINGDOM'
PUT 'US-UK' INS TOTFLAGS,COMMSCH,COMMCH
LABEL 'ACTUAL,MOV.AVG'
PUT SUM ABOVE
PUT 100×(ITEM 2) DIVIDED BY ITEM 3
PUT 12 MOVAVG ITEM 4
PLOT ITEM 4 5
```


PERCENTAGE OF PASSENGERS FLYING CHARTER
BETWEEN U.S. AND UNITED KINGDOM
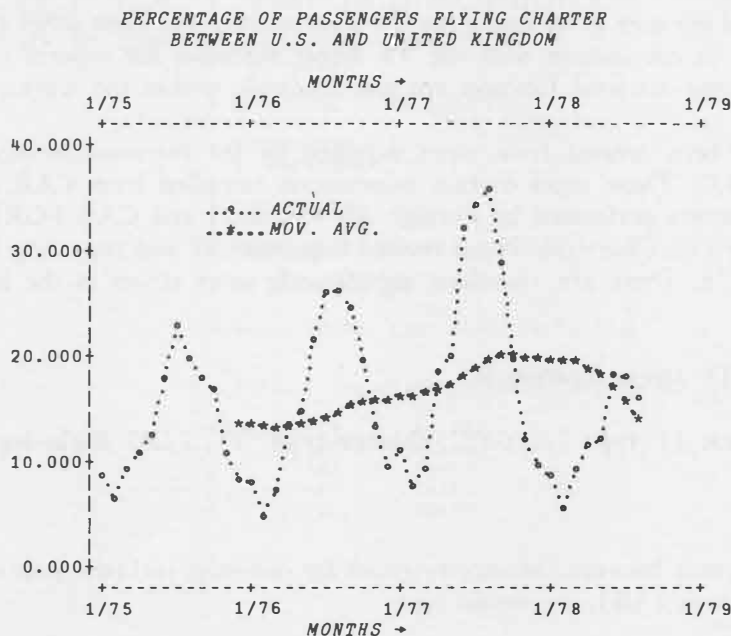
For those who wish to use INS in conjunction with other aviation data bases, type *INSSET* in workspace 702 *MAGIC*.

The data base is a monthly data base and historical data is available back to the beginning of 1975. The delay between the end of the month and the availability of the data is expected to be about 6 weeks.

The data is supplied by the U.S. Department of Transportation, in cooperation with the U.S. Department of Justice, Immigration and Naturalization Service. It is important to note that for U.S. departures, data is captured at the last U.S. port and first foreign port, and for U.S. arrivals, at the last foreign port and first U.S. port. The immigration forms from which the data is gathered are not required between the U.S. and Canada, so there is no data on Canada↔U.S. Traffic.

For more information, see your local Sharp representative.

T6 AIR CHARTER DATA BASE

Ann Ehrlich, Toronto

This new data base represents civil aircraft charters as filed by all air carriers for each route (except for intra-Alaskan charters), and for each different charter type. The T6 data base begins in April of 1976 to the current date (that is printed on initial loading of the workspace 702 *T6*). The information recorded for each charter flight beginning within a current quarter is filed in summarized monthly form. Information on the data base is available to all **SHARP APL** users, and various functions have been provided to aid the user in accessing the T6 information. The time series retrieval language, MAGIC, may be used in conjunction with the T6 access functions for reports or plots. Cross-reference functions and a name retrieval function are also available within the workspace.

The T6 Charter Data Base has been created from tapes supplied by the National Archives and Records Service in Washington D.C. These tapes contain information compiled from CAB FORM 217 (Report of Civil Aircraft Charters performed by Foreign Air Carriers) and CAB FORM 41 - T6 schedules (Report of Civil Aircraft Charters). Note: revised requirements and reporting instructions came into effect in May, 1976. There are, therefore, significantly more errors in the first few months of data.

The general format of the main T6 access function is:

'airport pair' *T*6 **carrier, account** ,[*T* **type**],[(*CHT* **'charter type '**)], [*LEG* **flight-leg**]
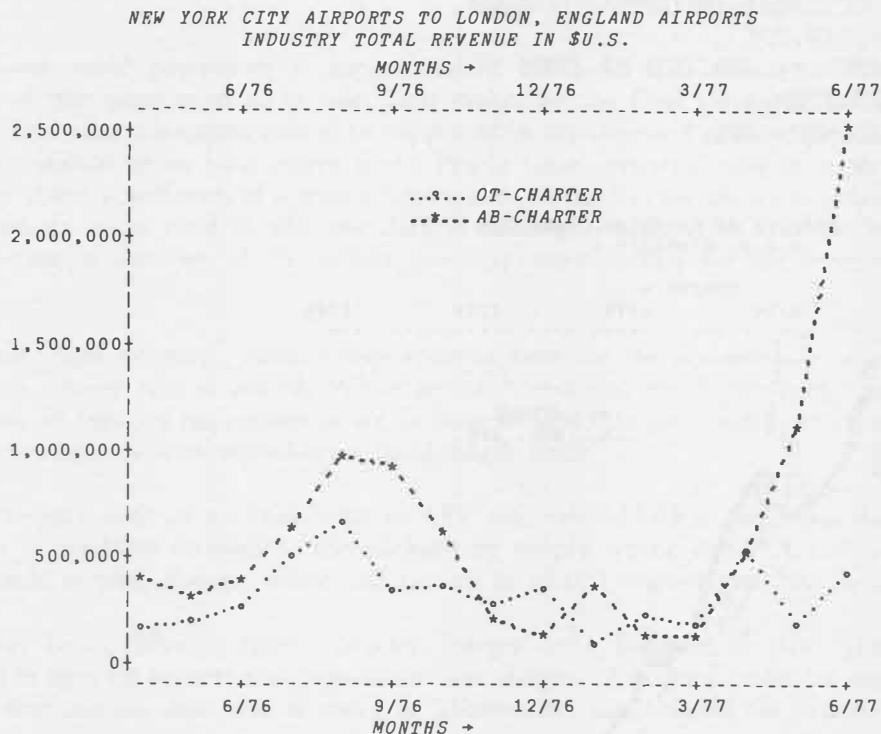
For example, to illustrate the difference between industry revenues for one-stop, inclusive tour charters (OT), and advanced-booking charters (AB), we would type:

T6 CHARTER DATA BASE

```
)LOAD 702 T6
T6SET 'ALL'
TITLE 'NEW YORK CITY TO LONDON, ENGLAND'
TITLE 'INDUSTRY TOTAL REVENUE IN $U.S.'
LABEL 'OT-CHARTER,AB-CHARTER'
PUT 'NYC→LDN' T6 IND, 5, (CHT 'OT,AB')
ΔSUPERPLOT 'AJ832'
PLOT ABOVE
```

```
          NEW YORK CITY AIRPORTS TO LONDON, ENGLAND AIRPORTS
                    INDUSTRY TOTAL REVENUE IN $U.S.
                              MONTHS →
                6/76        9/76       12/76        3/77        6/77
            -------------+-----------+-----------+-----------+----------+
  2,500,000+                                                            *
            |
            |
            |               ...9.... OT-CHARTER
  2,000,000+               ..*... AB-CHARTER
            |
            |
            |
  1,500,000+
            |
            |
            |
  1,000,000+
            |
            |
    500,000+
            |
            |
          0+
            -------------+-----------+-----------+-----------+----------+
                6/76        9/76       12/76        3/77        6/77
                          MONTHS →
```

PETROLEUM DATA BASE NOW AVAILABLE

Lib Gibson, Toronto

PETRODATA, a petroleum data base containing time series concerning production, stocks, imports, and refinery input and output of a variety of petroleum products in the United States is now available for use on the SHARP APL system. PETRODATA is comprised of data from two sources. The U.S. Dept. of Energy time series (retrieved by functions whose names start with DOE) are available back to the beginning of 1972 in most cases, and, in general, the data is available about 5 months after the end of the reporting period. The American Petroleum Institute data (accessed by functions whose names start with API) is updated weekly and is available as far back as January 1976. This data may be partially estimated due to late reporting.

To use the data base, first type:
```
)LOAD 121 PETRODATA
```
to access the software. The PETRODATA data base is accessed through MAGIC and is thus compatible with all other Sharp data bases, should anyone wish to analyze economic trends in conjunction with the petroleum industry.

PETRODATA

For a simple example, let us investigate the proportion of U.S. crude oil imports which are from Canada, focussing on P.A.D. District 1, which consists essentially of the Eastern Seaboard states. This information could be retrieved and plotted (using SUPERPLOT) as follows:

```
MONTHLY,DATED 1 72 TO 4 78
TITLE 'U.S. IMPORTS OF CANADIAN CRUDE OIL'
TITLE 'P.A.D. DISTRICT 1'
YLABEL 'o/o OF TOTAL IMPORTS'
PUT DOE14 D1,CAN,TOT
PUT 100 × (ITEM 1) DIVIDED BY ITEM 2
PUT 12 MOVAVG ITEM 3
LABEL 'ACTUAL,MOV. AVG.'
PLOT ITEM 3 4
```


U.S. IMPORTS OF CANADIAN CRUDE OIL
P.A.D. DISTRICT 1
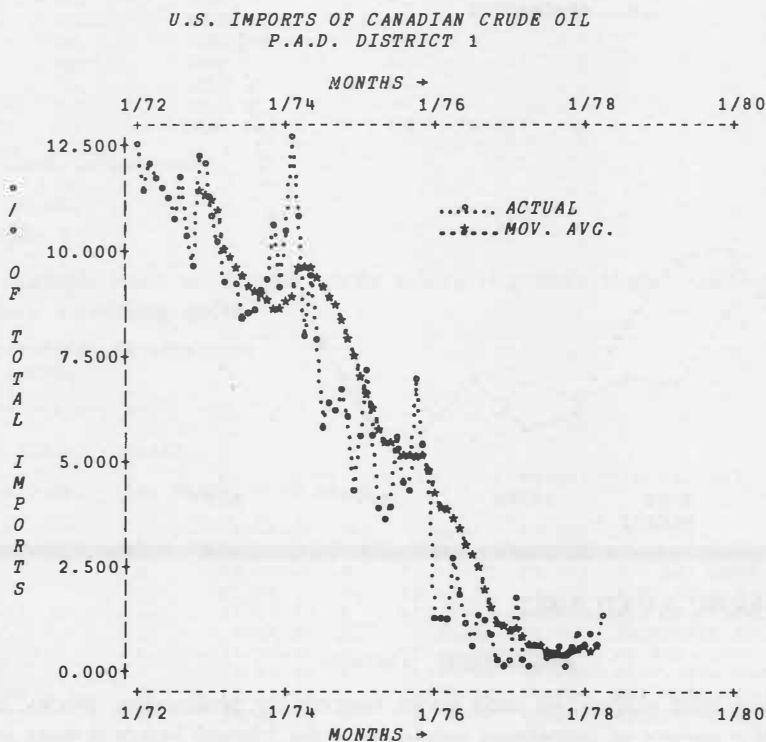
The following list gives a brief description of the various data bases that make up PETRODATA:

API1	Refinery operations	DOE3	Production of crude petroleum
API2	Refinery output	DOE7	Stocks of Crude Petroleum
API3	Crude Petroleum Stocks	DOE9	Refinery Input and Output
API4	Crude Petroleum Imports	DOE10	Stocks held at Refineries, in Pipelines, and at bulk terminals
API5	Crude Oil Stocks		
API6	Imports of Petroleum Products	DOE14	Imports of Foreign Crude
		DOE15	Imports of Finished Petroleum Products
		DOE16	Imports of Plant Condensate and Unfinished Oils

This data is available for various geographic districts in the United States. For further information, see your local SHARP APL representative.
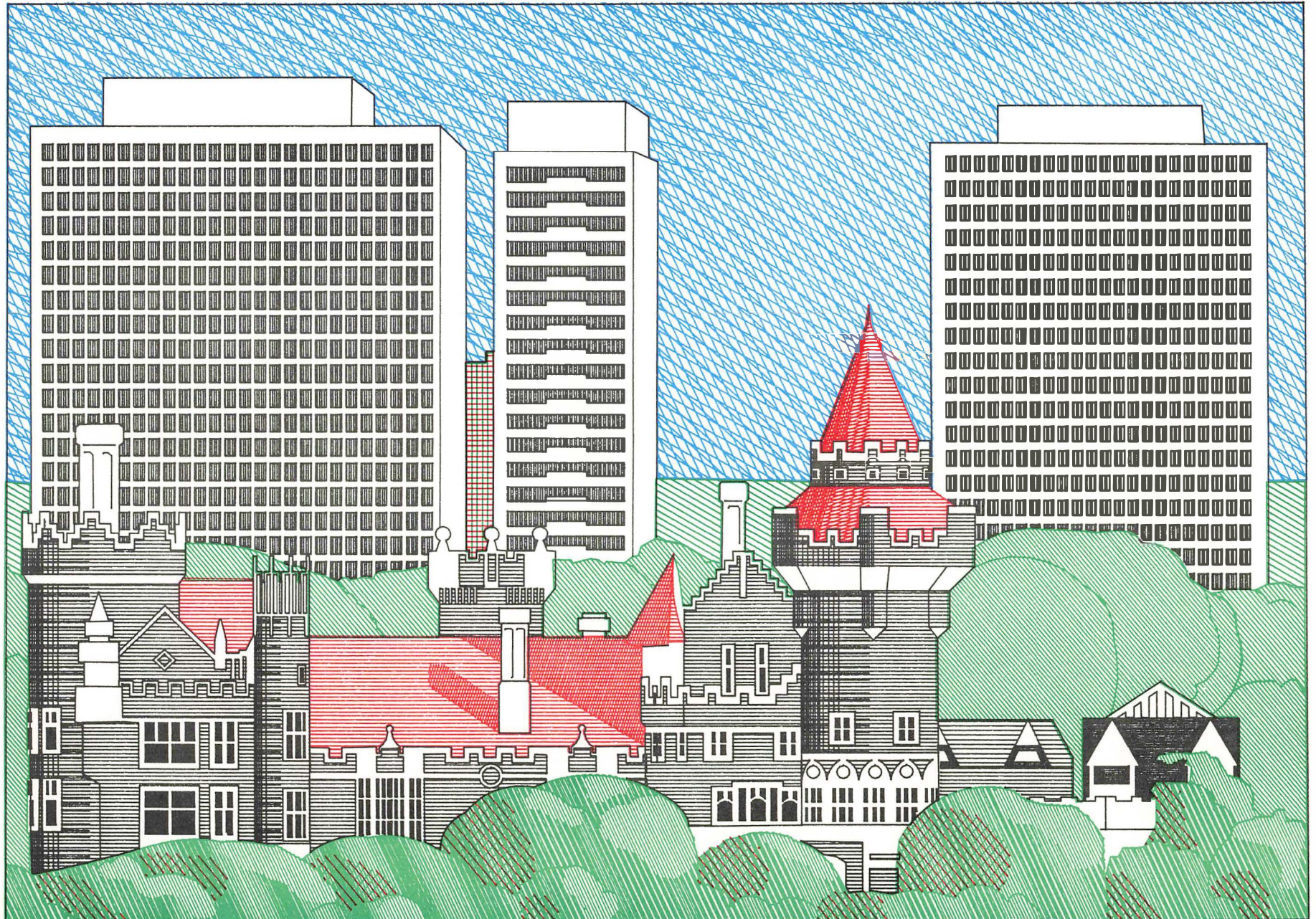
Created by Peter Wooster
with the I.P. Sharp Associates Graphics Package

Casa Loma

December 1978

Mabra

RECORD ADMINISTRATION SYSTEM

Hugh Hyndman, Birmingham

The present world population is approximately 4 billion. It is estimated that each day, 300,000 members of that population go to meet their maker for the final sorting of the sheep from the goats. Such an important assessment should be supported by accurate and detailed personnel records. Equally, since there should be no long delays at the Pearly Gates, retrieval time is important, needing in this case to be about a millionth of a second per record. Obviously, the ability to amend and delete records is required, as is the need to add new data to existing records. And since the world population has been growing at the rate of 75 million per year, some facility for the creation of new records is required.

Meanwhile, back on earth, similar requirements exist for the maintenance of personnel records, or indeed any similar sort of record. While we can't claim to match the performance of that celestial system, nor its capacity requirements, we do have MABRA, a generalised record administration system that handles records with mixed-type, fixed-length fields.

Users with very little or no knowledge of APL may use MABRA, as it is self-documenting. Online assistance is available throughout the package by simply typing *HELP*. A complete set of commands are available to add, change, delete and list up to 80,000 records and 200 fields.

Fields may be of different type: character, integer, real, Boolean, or date type, and dates may be converted to ages for reports and cross-tabulation analysis. Auxiliary tables for storing full descriptions of fields that contain data that is coded or abbreviated, can be used for reports.

Records, and fields within those records, may be selected for sorting and printing at either the terminal or high speed printer. Any field can be used as a search key. An n-dimensional cross-tabulation package with a field totalling and averaging option is available. Updates can be immediate or deferred (batch).

Up to ninety-nine MABRA systems may exist on one user number. The capability for many users to share data has been designed for data security: access levels are broken down to record, field, and command access levels. Files may be magic numbered for higher data security.

A utility workspace (85 *MABRAUTIL*) contains functions to manipulate raw data within a MABRA system. These functions are useful for writing special update routines or reports.

Typical MABRA applications are: personnel, stock control, product line and orders, part by part monitoring, dealer and supplier lists, and real-estate agent listings.

Sample Session

```
     )LOAD 86 MABRA
SAVED  13.33.49 10/24/78
     START

* MABRA. VERSION 1

* SYSTEM MODE

:ENTER

* SYSTEM NUMBER:13

* DATA MODE, SYSTEM IS 13: BANGER CARS LIMITED

13:LF - List all fields and their definitions

* LIST FIELD

* ALIGN PAPER, TYPE SPACE,CR TO START

FIELD NAME   FMT ARG        TYPE WIDTH INVERTED ACCESS  CODE-WID

SURNAME      15A1           CHAR 15       Y      ACL
INITS        3A1            CHAR  3              ACL
DOBIRTH      1G ZZ/ZZ/Z9    DATA  1       Y      ACL
SEX          1A1            CHAR  1       Y      ACL
DOJOIN       1G ZZ/ZZ/Z9    DATE  1              ACL
SALARY       CI6            INT   1       Y      ACL
JOBTITLE     30A1           CHAR 30              ACL
LOCATION     2A1            CHAR  2              ACL    20

13:LR - selective listing of records

* LIST RECORDS
```

Example 1

This example finds all people whose salary is greater than 10,000 pounds, and prints all their fields in salary ascending order.

```
* CONSTRAINTS: SALARY>10000
    8 FOUND,

* PRINT FIELDS: ALL

* SORT FIELDS: SALARY

* ALIGN PAPER, TYPE SPACE,CR TO START

SURNAME          INITS   DOBIRTH  SEX    DOJOIN   SALARY  JOBTITLE                     LOCATION

EVANS            A       26/03/41  M     21/03/77  10,981  SCH AND DATA MGMT SUPV       CM
BEDDOWS          LM      27/10/15  M     13/02/39  15,000  SUPT TOOL ROOM               CT
BRADBURY         S       16/03/30  M     27/08/46  15,000  BUS SERV ADMIN               CT
EVETTS           G        7/04/16  M     15/10/34  15,000  PRINCIPAL ENGINEER DESIGN    CT
SMITHSTON        RC      11/08/15  F      2/05/32  15,000  CO ORD,PLANS                 CT
SHAW             V       13/05/30  M     23/08/44  15,000  SUPV PROD CHANGE JAGUAR      CM
SMALLMAN         EJ      20/03/18  M     25/05/35  15,000  SEN ANAL,CUR MED SAL PRODUCT  BL
RICHENS          PA      29/06/21  M      1/01/37  15,000  SUPT,INSPECTION              CN
```

Example 2

This example finds all people whose working location is Canada (first character of *LOCATION* is *C*) and who are female. Note that the constraint is **not** an *APL* expression, but a simple way to identify records. Of those people meeting the constraint, the surname, initials, full location description, date of joining, and salary fields are printed in initials within surname ascending order.

```
* CONSTRAINTS: LOC[1]=C∧SEX=F
    6 FOUND.

* PRINT FIELDS: SURNAME,INITS,(LOC),DOJOIN,SAL

* SORT FIELDS: NAME,INI

* ALIGN PAPER, TYPE SPACE ,CR TO START

SURNAME          INITS   (LOCATION)                  DOJOIN    SALARY

BOAD             R       TORONTO, CANADA             27/01/51   6,809
BRADLEY          AW      MONTREAL, CANADA             1/03/69   5,278
CHATHORNE        JF      MONTREAL, CANADA             1/06/70   5,240
OLDFIELD         MG      TORONTO, CANADA              5/10/70   5,770
SEAGER           JG      TORONTO, CANADA              2/09/63   5,173
SMITHSTON        RC      TORONTO, CANADA              2/05/32  15,000
```

Example 3

This example finds all people satisfying mandatory U.K. retirement within the next 5 years, and prints their surname, age ($\alpha DOBIRTH$), sex, location code, initials, job title and age within sex ascending order. An α (alpha) preceding a date field converts the date into a length of time (in years) from today's date. Mandatory U.K. retirement is 60 years old for females and 65 years old for males.

```
* CONSTRAINTS: (SEX=F∧αDOB>55)∨(SEX=M∧αDOB>60)
    8 FOUND

* PRINT FIELDS: SURNAME,αDOB,SEX,LOC,INIT,JOBTITLE

* SORT FIELDS: SEX,-DOBIRTH

* ALIGN PAPER, TYPE SPACE,CR TO START

SURNAME        αDOBIRTH  SEX   LOCATION   INITS  JOBTITLE

CLARKE            55     F       EL        CJ     SUPT PRODN
SEAGER            60     F       CT        JG     CH PRODN ENG ASSY/TOOL
SMITHSTON         63     F       CT        RC     CO ORD,PLANS
SMALLMAN          60     M       EL        BJ     SEN ANAL,CUR MED SAL PRODUCT
STANTON           61     M       EC        BM     SUPT MAINT
EVETTS            62     M       CT        G      PRINCIPAL ENGINEER DESIGN
LYALL             62     M       CT        GA     MAN PROJ CONTROL OPS
BEDDOWS           62     M       CT        LM     SUPT TOOL ROOM

* CONSTRAINTS: STOP

13:AN - CROSSTABULATION ANALYSIS

* CROSSTABULATION ANALYSIS
```

Example 4

This example finds total salaries by location.

```
* OPTION? (F/T/A/FT/FA/FTA/TA): T

* CONSTRAINTS: SEX=M
    40 FOUND.

* ATTRIBUTE LIST: LOCATION

* ATTRIBUTES ARE:
  1. LOCATION

* USE RANGES? (Y/N):

* FIELD TO BE TOTALLED: SALARY

* DO ANALYSIS? (Y/N): Y

* ALIGN PAPER, TYPE SPACE,CR TO START


* TOTALS. CONSTRAINTS: SEX=M, ATTRIBUTES: LOCATION, TOTALLING  SALARY

LOCATION=CM :      87127
        =CT :      94545
        =EC :      56833
        =EL :      63352
      TOTAL :     301857
```

Example 5

This example finds an age ($\alpha DOBIRTH$) by length of service ($\alpha DOJOIN$) distribution. The ages and length of services are put into ranges.

```
* OPTION? (F/T/A/FT/FA/FTA/TA): F

* CONSTRAINTS: ALL
    50 FOUND.

* ATTRIBUTE LIST: αDOBIRTH,αDOJOIN

* ATTRIBUTES ARE:
  1. αDOBIRTH
  2. αDOJOIN

* USE RANGES? (Y/N): Y

* FOR WHICH ATTRIBUTE NO.: 1

* αDOBIRTH

:25
:30
:40
:50
:60
:STOP

* FOR WHICH ATTRIBUTE NO.: 2

* αDOJOIN
:2
:4
:6
:8
:10
:STOP

* FOR WHICH ATTRIBUTE NO.: STOP

* DO ANALYSIS? (Y/N): Y

* ALIGN PAPER, TYPE SPACE,CR TO START
```

```
* FREQUENCY ANALYSIS. CONSTRAINTS: ALL, ATTRIBUTES: αDOBIRTH,αDOJOIN.
```

	C1	C2	C3	C4	C5	C6	TOTAL
$\alpha DOBIRTH$< 25					1		1
25≤$\alpha DOBIRTH$< 30	1					1	2
30≤$\alpha DOBIRTH$< 40	2	1	1	2	3	6	15
40≤$\alpha DOBIRTH$< 50		1			1	18	20
50≤$\alpha DOBIRTH$< 60			1			4	5
60≤$\alpha DOBIRTH$						7	7
TOTAL	3	2	2	2	5	36	50

```
C1 :       αDOJOIN<  2
C2 :    2≤αDOJOIN<  4
C3 :    4≤αDOJOIN<  6
C4 :    6≤αDOJOIN<  8
C5 :    8≤αDOJOIN< 10
C6 :   10≤αDOJOIN

* OPTION? (F/T/A/FT/FA/FTA/TA): STOP

13: STOP

* SYSTEM MODE

:STOP
```

APL79 CONFERENCE SHAPING UP

Rochester, New York,

May 30 through June 1, 1979

The conference will feature papers on all aspects of APL, some that have been contributed, and some papers that were specifically invited.

APL79 is the eleventh in a series of conferences sponsored by STAPL, and is the first one to have invited papers. (STAPL, the SIGPLAN Technical committee on APL, is an affiliate of the Association for Computing Machinery. Besides sponsoring conferences like APL79, it publishes APL Quote Quad, the principal archive journal serving the APL community.)

"The purpose of inviting papers is to broaden the perspective of APL users, to let them see their language in a context that includes other languages, non-traditional uses of computers, and applications that may not be well suited to APL," according to APL79 Program Chairman Prof. Paul Penfield Jr., of the Massachusetts Institute of Technology. "We have extended invitations to an outstanding group of people, mostly outside the APL community. The topics to be covered in these papers include data models, general arrays, operators in APL, relations between APL and other languages, and uses of computers other than the traditional algorithmic style."

Abstracts submitted by authors who wished to contribute were reviewed in September by a group of knowledgeable referees and by the Program Committee. Two-thirds of the 200 abstracts were selected for the next step, and the selected authors submitted full-length papers. These are now being reviewed, and the Program Committee will select the best of them for presentation at APL79 and publication in the conference Proceedings. Penfield reports: "we were pleased with the abstracts, and expect the final papers to be of high quality."

Readers who want to submit a paper but have not yet done so should contact Penfield immediately. A paper of wide interest and high quality still may have a chance.

One novel aspect of APL79 is the possibility of electronic submission of abstracts and papers, using the major APL time-sharing services. One out of every six abstracts came in electronically. I. P. Sharp Associates is cooperating in this by allowing its system to be used by its customers and staff to submit abstracts and papers. Readers who are interested are encouraged to browse in the workspace 1 *APL*79 for further information.

Besides the papers, APL79 will have a trade show. "This is an excellent opportunity to see the latest APL services, implementations, books, terminals, and related products," comments APL79 General Chairman Fletcher W. McTaggart, I.P. Sharp's General Manager for the U.S. based in Rochester, at least when he isn't busy running APL79.

The next issue of the newsletter will include information about registration and attendance. This information can also be obtained from:

Ms. Lynne C. Shaw,
APL79 Registration Chairman,
Box 40004, Rochester, New York 14604.

APPLICATIONS LIBRARY UPDATE

NEW			
	1	*APL*79	See page 15.
	5	*FONT*	Contains function definitions that are equivalent to APL functions for which no symbols exist on the Telex keyboard, and a means for editing functions.
	27	*HYBRID*	See page 6.
	85	*MABRAUTIL*	See page 11.
	86	*MABRA*	See page 11.
	92	*SPACEWAR*	
	121	*PETRODATA*	See page 9, 10.

CHANGED			
	1	*REFERENCE*	New function *ALLTABLES* to highspeed print the whole file.
	4	*EDIT*	Easier to highspeed print output; edited text available in global variables - see Δ*DESCRIBE*.
	51	*FPPLOT*	New graphics capability added (old, cheaper plotting via *LAST*100 is still available) - see *DESCRIBE* for more details.

GONE			
	74	*EQUAL*	Obsolete - superseded by 27 *HYBRID* (temporarily saved in 499 *EQUAL*74).
	72	*MISPAK*	The *MISPAK* library 72 has been superseded by MABRA, and all related workspaces (*MAINTAIN*, *EXTRACT*, *SEARCH*, *REPORTS*, *PACK*, *BULKDELETE*, and *MISPAKHOW*, are now stored in 499 **ws-name**72.

SYSTEM RELIABILITY FOR THE THIRD QUARTER 1978

	Sched. hours	Downs	Min. down	% Up
July	532	4	46	99.9
August	562	9	77	99.8
September	527	14	152	99.5

CANSIM*

The most recent version of the CANSIM Mini Base was released on the SHARP APL system on October 1, 1978. The size of the Mini Base was reduced to just over 17,000 time series. Unfortunately a number of users were not prepared for the large number of changes in the Mini Base and found that time series they were interested in using had been deleted from the system.

A new version of the Mini Base is released by Statistics Canada on April 1st and October 1st each year. Our normal procedure is to announce intended changes to the Mini Base in workspace 81 *CSNEWS* about one month prior to the release of the new version. It is very important that all users of the CANSIM data read the news items in 81 *CSNEWS* when advised by the Sharp CANSIM system.

---

*CANSIM is the registered Trade Mark for Statistics Canada's machine-readable data base. When publishing any data retrieved from CANSIM, the following must be used as the source:
"These data originate from CANSIM which is a registered Trade Mark for Statistics Canada's machine-readable data base."

SYSTEM TIME AND TIMESTAMPS IN UTC

Invariant Time Standard Throughout the Network

In order to provide SHARP APL users with an invariant time standard, all system timestamps are now based on Coordinated Universal Time (UTC). This change was made in early October to free users from the idiosyncrasies of local time adjustments. UTC is the international time standard disseminated by national time services, and is maintained by the interval of the atomic second. It is similar to the more familiar standard of Greenwich Mean Time (GMT), the mean solar time for the meridian at Greenwich, England.

The change affected the following timestamps:

Current time and date ($\Box TS$)   Workspace timestamps
File component information ($\Box RDCI$)   Signon/signoff timestamps
Time of day relative to date of signon   The Computer Centre clock
Signon time   The operating Schedule (see page 2,
Date of signon   and in 1 *NEWS*)

SATN-29 describes the modifications in the treatment of time and timestamps in the system.

COURSES

SEMINARS:

Birmingham
Advanced APL Operators, Nov 27
Magic (1/2 day), Dec 18
Pert (1/2 day), Jan 29
Plotting (1/2 day), Feb 26

Calgary
Time Series Forecasting (1 day), Nov 17

Cleveland
Actuarial Applications
in SHARP APL (1/2 day), Nov 16

Toronto
Actuarial APL Techniques (1 day), Dec 6, Feb 6
AIDS - Introduction (2 days), Dec 11, Feb 7-8
Box-Jenkins (1 day), Nov 14, Jan 12
Data Base Design (1/2 day), Nov 27, Jan 25
Financial Analysis (1 day), Nov 13
Forecasting Methods (1 day), Nov 16, Jan 11
Graphics (1 day), Dec 5, Feb 5
Magic for Time Series Analysis (1 day), Nov 9, Jan 15
Plotting with SHARP APL (1 day), Nov 21, Jan 16
Regression Analysis (1 day), Dec 13, Feb 14
Report Formatting with SHARP APL (1/2 day), Dec 15, Feb 15
Saving Money with N-tasks + B-tasks (1 day), Dec 14, Feb 12
Text Editing (3 days), Jan 17

U.K. (London)
Systems Design (1 day), Nov 16-17
Advanced APL Operations and Functions, Nov 14
Magic for Time Series Analysis, Nov 30, a.m.
MABRA Data Base Management System, Nov 30, p.m.
Highspeed Print, Dec 7
N-tasks and B-tasks, Dec 7
Plotting with Magic, 3 *PLOT* and *GRAFPLOT*, Jan 18
Security - I.P. Sharp Standards and Procedures:
What you can do to make your system secure, Jan 30
SNAP - A new CPM/Pert Package, Feb 22

Warrington   Seminars by arrangement

INTRODUCTION TO APL:

Calgary
(5 days)
Nov.15,16,22,29,Dec.6

Dallas
(4 days)
Nov.7,9,14,16
Dec.5,7,12,14

Houston
(4 days)
November 6-10
December 4-8

Minneapolis
(6 half-days)

Ottawa
(5 days)
November 6-10
December 4-8
January 1-5
February 5-9

Rochester
(5 days)
November 20-24
December 18-22
January 24-28
February 21-25
March 21-25

Toronto
(3 days)
November 28-30
November 28-30
December 18-20
January 8-10
January 29-31
February 19-21

U.K. Birmingham
(3 days)
November 15-17
January 10-12

U.K. London
(3 days)
November 6-8
December 4-6
January 15-17
February 5-7

U.K. Warrington
(combined Intro. and Inter.)
Nov.22,23,24,27,28
Jan.24,25,26,29,30

Vancouver
(3 days)
November 22-24
January 24-26
February 21-23
March 21-23
April 25-27
May 23-25

INTERMEDIATE:
Toronto, Nov.22-24, Jan.22-24
U.K. London (2 days),
Nov.1-2, Dec.13-14, Jan.25-26, Feb.20-21

ADVANCED
Toronto, Jan. 3
U.K.London, Nov.15-16, Feb.1-2 (APL & System Design)
U.K. Birmingham, Dec.7-8, Feb.8-9 (")

SPECIAL COURSES:

Introduction to APL
        (in Dutch), **Amsterdam**, Nov. 22-24
        (in German), **Zurich**, Nov. 13-17
        (in German), **Duesseldorf, Vienna**
        (in Swedish or English), **Stockholm**,
                (after Dec 15)
Intermediate APL
        (in Swedish or English), **Stockholm**
                (after Dec 15)
Advanced APL
        (in Swedish or English), **Stockholm**
                (after Dec 15)

Appreciation of APL
        London, U.K., Jan.23
        Warrington, U.K., Dec. 11, Feb. 19
APL Review (1 day)
        London, U.K. Dec.12, Jan.24, Feb.19
Use a Terminal (1 day)
        London, U.K., Nov.29, Jan.19

Actuarial Applications in SHARP APL

Cleveland: The seminar will be held at the Christopher Inn, 300 Broad Street, Columbus, Ohio on **November 16** from 1 to 5 p.m. with **Jerry Cudeck** of Toronto as the main speaker.

The main thrust of the seminar will be directed toward demonstrating the ease with which actuarial calculations can be carried out. In particular, we will be addressing the problems of net and gross premium calculations, varying time dependent interest assumptions, single and multiple life annuities, reserves, non-forfeiture values, asset share studies, and time permitting, some pension valuation topics. Special classes will be conducted in November and December as the need arises.

LETTER TO THE EDITOR

Decision Support Systems (DSS)
11 October 1978

The area of Decision Support Systems (DSS) has been growing rapidly during the last two years. Multiple applications dealing with Strategic Planning, Management Control and Operational Control have been reported; two 1978 books and several articles have discussed this subject. In the paper 'A Conceptual Model for Interactive Systems' presented at the Toronto meeting, Roberto Skertchly and I were proposing APL as **the** language for DSS. We are preparing two additional papers for APL79 along the same lines.

Has IPSA considered DSS as a marketing strategy for APL? There are many APL applications that may be classified as DSS, but most APL users are not familiar yet with DSS.

Roberto and I would like to initiate a DSS interest group. We could have a public workspace with the software used in our APL78 paper (several people have requested this).

As you can see, the conference left us not only pleasant memories, but also productive ideas and renewed enthusiasm.

> Luis Contreras, So. Methodist U.
> Roberto Skertchly, Stanford U.

WANTED

We have had a difficult time recruiting people with the right qualifications and experience in Europe. We are, therefore, widening the search area and soliciting the help of our newsletter readers.

Specifically, we are looking for someone with the following credentials:

1. Speaks fluent German
2. Speaks fluent APL
3. Owns a Common Market passport

If you, by some chance, stumble into someone who answers this description, please let us know.

Name: _____

Co.: _____

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UPDATE

☐ Please amend my mailing address as indicated.

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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 1 2DH
Scotland
(0224) 25298

Amsterdam
Intersystems B.V.
Herengracht 244
1016 BT Amsterdam
The Netherlands
(020) 24 40 50
Telex: 18795 ITS NL

Atlanta
I.P. Sharp Associates, Inc.
Suite H-10
2550 Akers Mill Rd. N.W.
Atlanta, Georgia 30339
(404) 953-1020

Birmingham
I.P. Sharp Associates Limited
2nd Floor, Radio House
79/81 Aston Rd. North
Birmingham B6 4BX
England
021-359-6964

Boston
I.P. Sharp Associates, Inc.
Suite 812
148 State St.
Boston, Mass. 02109
(617) 523-2506

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

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

Chicago
I.P. Sharp Associates, Inc.
2 North Riverside Plaza
Room 1746
Chicago, Illinois 60606
(312) 648-1730

Cleveland
I.P. Sharp Associates, Inc.
Suite 590, 27801 Euclid Ave.
Cleveland, Ohio 44132
(216) 261-0800

Copenhagen
I.P. Sharp ApS
Østergade 24B
1100 Copenhagen K
Denmark
(01) 112 434

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

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 Ave.
Edmonton, Alberta T5J 3B1
(403) 428-6744

Gloucester
I.P. Sharp Associates Limited
29 Northgate St.
Gloucester, England
0452 28106

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 St.
London, Ontario N6A 1H3
(519) 434-2426

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

Los Angeles
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Reseda, Ca. 91335
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South Yarra
Victoria, Australia 3141
(03) 244-417

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

Minneapolis
I.P. Sharp Associates, Inc.
Suite 1371, 1 Appletree Square
Bloomington, Minn. 55420
(612) 370-0885

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

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New York, N.Y. 10017
(212) 986-3366

Newport Beach
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Suite 1135, 610 Newport Center Dr.
Newport Beach, Ca. 92660
(714) 644-5112

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

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

Philadelphia
I.P. Sharp Associates, Inc.
Suite 407, 1420 Walnut Street
Philadelphia, PA. 19102
(215) 735-3327

Rochester
I.P. Sharp Associates, Inc.
1200 First Federal Plaza
Rochester, N.Y. 14614
(716) 546-7270
Telex 97-8380

San Francisco
I.P. Sharp Associates, Inc.
Suite C415, 900 North Point St.
San Francisco. Ca. 94109
(415) 673-4930

Seattle
I.P. Sharp Associates, Inc.
Suite 217, Executive Plaza East
12835 Bellevue-Redmond Rd.
Bellevue, Wa. 98005
(206) 453-1661

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

Sydney
I.P. Sharp Associates Pty. Ltd.
Suite 1342, 175 Pitt Street
Sydney, N.S.W., Australia 2000
(02) 232-5914

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

Vancouver
I.P. Sharp Associates Limited
Suite 604, 1112 West Pender St.
Vancouver, B.C. V6E 2S1
(604) 682-7158

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

Vienna
I.P. Sharp Ges. mbH
Rechte Wienzeile 5/3
1040 Vienna, Austria
(222) 57 65 71

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

Washington
I.P. Sharp Associates, Inc.
Suite 307, 1730 K Street N.W.
Washington, D.C. 20006
(202) 293-2915

Winnipeg
I.P. Sharp Associates Limited
Suite 909, 213 Notre Dame Ave.
Winnipeg, Manitoba R3B 1N3
(204) 947-1241

Zurich
I.P. Sharp A.G.
Badenerstrasse 141
8004 Zurich
Switzerland
(1) 241 52 42

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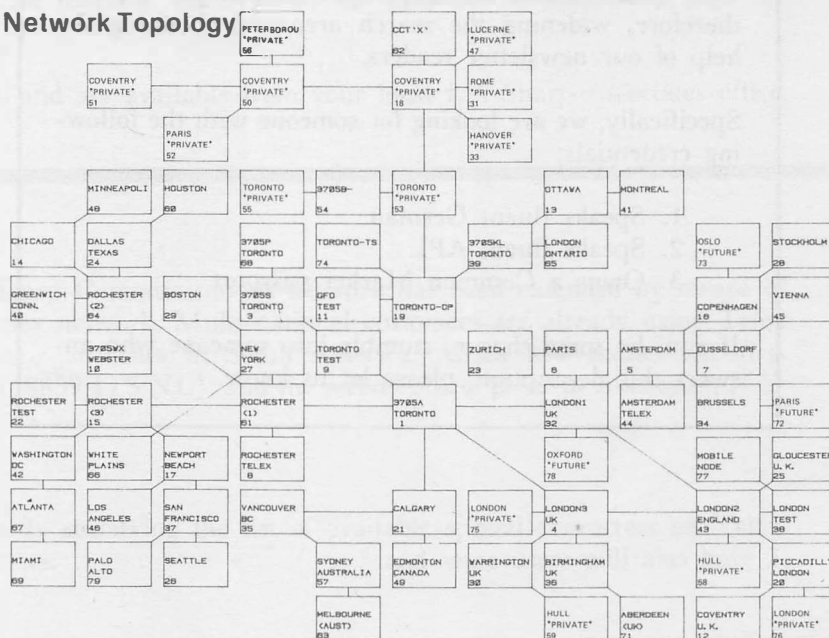## APL OPERATOR VOICE (416) 363-2051   COMMUNICATIONS (416) 363-1832

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- Greenwich (Ct)
- Halifax
- Hamilton
- Kitchener
- Liverpool
- Manchester
- Milan
- Paris
- Raleigh
- Regina
- Saskatoon
- Syracuse
- White Plains (NY)

In the United States the SHARP APL Network is interconnected with the networks of TYMNET and TELENET to provide local dial access in more than 100 other cities.

Network Topology