AGSO

PALEO DATABASE -
MANUAL FOR DATA ENTRY,
MODIFICATION AND DISPLAY

By D.L. STRUSZ & S.L. LENZ

RECORD 1995/16

AGSO

**AUSTRALIAN
GEOLOGICAL SURVEY
ORGANISATION**

PALEO DATABASE

MANUAL FOR DATA ENTRY, MODIFICATION AND DISPLAY

Record 1995/16

D.L. Strusz and S.L. Lenz

AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources: Hon. David Beddall, MP
Secretary: Greg Taylor

AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

Executive Director: Harvey Jacka

CONTENTS

INTRODUCTION

The PALEO database is a sample-oriented palaeontological database which is capable of storing data covering a wide variety of taxonomic, biostratigraphic, curatorial and technical requirements. The database is relational, operating on the AGSO's computer network under the ORACLE Database Management System. Because of its wide scope it is a powerful tool for both research and curation, but pays an inevitable price in associated complexity. And like most actively used databases it is always being improved! PALEO originated over 20 years ago as an HP/"Image" database, and has seen not only migration to a different database system but to different computer systems. As a result of this history, and of developments in the types of data recorded, as well as inconsistencies in data entry over the years, many early records are incomplete, some have been corrupted, and some tables contain significant redundant material. As work continues, particularly on cataloguing the Commonwealth Palaeontological Collection, detected shortcomings are being fixed, but it is the responsibility of the individual staff who use the system to bring data within the scope of their professional interests up to date. In this way the usefulness and reliability of the database will continue to increase.

This manual is designed as a day-to-day guide to all aspects of data handling within PALEO in its current state of development. For a more detailed discussion of the database itself, a separate AGSO Record is being prepared, while a broader discussion of Oracle can be found in AGSO Record 1993/81 (*Users' guide to AGSO's Oracle database system*). The following instructions are for PCs, and assume the user has logged on to the MPSR (formerly OS&PG) LAN. Where appropriate, instructions for the Windows environment are appended to those for DOS.

After an outline of manual conventions and login procedures, the Oracle menu system and modes of operation are discussed, and the various menu options, and how they are used, are presented. There follows a section on the available Report programs, and a very basic guide to the use of SQL*Plus. Finally, an account is given of the current method for transferring files from the AViiON to LAN directories or one's own PC. An Appendix gives details of the general methods used in data entry, modification ("updating") and retrieval ("querying").

CONVENTIONS

Several conventions are used throughout this manual in describing keyboard procedures:
1. Special keys to be pressed are shown as <key name>. Two to be pressed simultaneously are shown as <key name + key name>, keys to be pressed in sequence as <key name, key name, key name>.
2. Characters or text strings to be entered are shown in **boldface**.
3. Where key combinations performing Oracle functions are specified, the Oracle name for the combination or function may also be shown, as [**function**], if that makes the explanation clearer.
4. The term "enter" followed by a **string of text** implies typing the text, then pressing <Enter>. It can also mean, more generally, that some data are to be added to a database.
5. The term "select" means indicating a chosen item on a menu (by highlighting using the cursor keys or mouse, or by typing the item number), and implementing that selection with <Enter> or other appropriate means.
6. The term "see" refers to what should appear on the screen following a command.
7. Commands or specific actions are indicated by the symbol ▸.
8. The term "record" is used rather broadly, to imply the sum of all available data for a single sample or specimen, be that confined to one table or spread over many.

LOGIN PROCEDURES

Logging into PALEO involves saying who you are (*username*) and that you are entitled to enter the system (*password*). There are separate passwords for the AViiON and Oracle. The AViiON password is case-sensitive, and cannot be simply alphabetic, the Oracle password is not case-sensitive, and may be purely alphabetic or include other characters, the only proviso being that the *first* character *must* be alphabetic. The AViiON password also has to be changed periodically.

In the following guide to login and logout procedures, we will use as an example the identity of Dr Joseph Bloggs, a temporary member of staff. His username is *jbloggs*, and he has set his passwords to *dumb1* for the AViiON, *dumb* for Oracle (how to do this is shown in Appendix 1).

1) Log in to AViiON ---

DOS (from the LAN prompt, e.g. M:>):
▸ enter **menu**
     see   Main LAN menu
▸ select B: Onshore network services
     see   Netware utilities menu
▸ press **f** or **g** (selects Login Avion for Oracle (lan workplace ...) according to whether the program is loaded on your C: drive or the network server).

WINDOWS:
▸ select the AViiON Oracle icon in the LAN WorkPlace window

    see   DG/UX Release 5.4.1 (av)   (*or whatever the current version is*)
           login: ▸ enter *jbloggs*
           Password: ▸ enter *dumb1*
               If Dr Bloggs' AViiON password has expired - "aged" - he will be asked to enter old and new passwords at this stage.
    see   Copyright messages
           Statement of your default terminal type
           ▸   *If this is pc-vt*, press **<Enter>**
           ▸   *If something else is specified*, enter **pc-vt**
    see   Advice on network news and mail (normally none).
    see   av:/home3/jbloggs $ -- i.e. Dr Bloggs' AViiON home directory prompt.

At this point, Dr Bloggs has successfully logged into the AViiON, and is about to run PALEO under Oracle.

2) Log in to PALEO ---

▸ enter **paleo**
    see the Oracle login screen, asking for entry of username and password.
▸ enter *jbloggs*
▸ enter *dumb*
    see the PALEO Main Menu. Dr Bloggs is now ready to use PALEO. From this point on he must use Oracle keystrokes (see Appendix 2), since Unix commands no longer apply.

LOGOUT PROCEDURES

1) Exit PALEO ---

If Dr Bloggs has opened a Form he should --
▸   press **<Alt + F10> [exit]**
If he is within a Menu, then he should --
▸   select Option 1 *OR* press **<Alt + F10>**
He repeats this as often as necessary *until* --
see: av:/home3/jbloggs $

2) Exit AViiON ---

▸   Enter **exit**
Dr Bloggs will now find himself back at his starting point - either in the LAN Netware
utilities menu, or in the Windows Program Manager screen.

ORACLE MENU SYSTEM

```
                    ┌─────────────┐
                    │  MAIN MENU  │
                    └─────────────┘

┌────────────────────┐  ┌─────────────┐  ┌─────────────────────┐
│ CATALOGUE REPORTS  │  │ FORMS MENU  │  │ CURATORIAL REPORTS  │
└────────────────────┘  └─────────────┘  └─────────────────────┘

          ┌──────────────────────────────┐
          │ FORMS FOR INDIVIDUAL TABLES  │
          └──────────────────────────────┘
```

Access to the many PALEO systems, reports, etc. is by way of a series of *menus*, which you will automatically enter once you have logged into the database. The Main Menu gives access to nested menus for using Oracle forms, two Report menus, and the SQL*Plus program. For all menus, you select an option either by using the cursor keys to highlight it, or by typing its number. In each Menu, the invariable first option, the default selection on opening the menu, is to exit that menu.

Possible actions are:
► Activate the selection with **<Enter>**.
► Return to a previous menu (or, in the Main Menu, to the operating system) by selecting Option 1.
► Leave PALEO directly with **<Alt + F10>**.

MAIN MENU

The Main Menu is portrayed at right. Note that in this case, Option 1 takes you completely out of PALEO. The other options provide access to three other menus, and one program (SQL*Plus):

```
┌─────────────────────────────────────────────┐
│        AGSO PALAEONTOLOGICAL COLLECTIONS     │
│                  MAIN MENU                    │
│                                              │
│                                              │
│         1. Exit to operating system.         │
│        ▌2. Forms for data entry/retrieval.▐  │
│         3. Catalogue reports.                │
│         4. Curatorial reports.               │
│         5. Use SQL*Plus.                     │
│                                              │
│                                              │
│                                              │
│         Enter your choice: 2▌        ▐       │
│                  PALEO database              │
└─────────────────────────────────────────────┘
Application: PALMENU   Menu: PALMENU    v  ^              <Rep>
```

1. **Exit.**
2. **Forms menu for data entry and retrieval** --- the normal selection for data manipulation.
3. **Catalogue reports** --- a series of Report programs which produce files used in the production of CPC catalogues.
4. **Curatorial reports** --- various Report programs producing files for curatorial purposes (e.g. specimen labels or hard copy of records).
5. **SQL*Plus** This option is briefly discussed below. The prompt displayed is SQL-Prod>.

FORMS MENU FOR DATA ENTRY AND RETRIEVAL

This menu, more succinctly referred to as the Forms Menu, gives access to a variety of Forms, several of which are composite views of several tables. Some are of general use, some are specific to certain aspects of Palaeontology within AGSO. The overall appearance and methods of selection are the same as for the Main Menu, the options being ---

1. **Exit to previous menu.**
2. **Initial data entry and display.** The single-screen Form *INITENTRY*, useful for entry and display of field and sample data -- see pp. 8-14.
3. **Full data entry and display.** The double-screen Form *PALENTRY*, useful for entry and display of data for published specimens -- see pp. 8-12, 14-16.
4. **CPC allocation.** This is a very specific program, rather than simply a Form. It is designed to attach *previously-entered* field data to the CPC numbers of published (or about-to-be-published) specimens -- see pp. 23-24.
5. **After using item 4 run this report.** An essential but quick reporting program which automatically alerts the palaeontological curator of execution of Option 4 -- see p. 24.
6. **Foraminiferida.** A Form for constructing faunal lists of forams -- see pp. 24-25.
7. **Conodonts.** As Option 6, but designed for conodonts -- see p. 25.
8. **Access to individual tables.** This gives access to the Tables Menu (see pp. 17-22), from which Forms can be run for most of the individual tables.
9. **Palynological processing.** A Form used for keeping track of processing and location of palynological samples -- see p. 26.
10. **Find location of specified holdings.** This View is designed for searching for the location of samples according to a variety of selection criteria -- see p. 27.

CATALOGUE REPORTS MENU

The various report programs run under this menu are specifically designed to provide the raw data, as appropriately formatted ASCII files, for the assembly of taxonomically-based CPC catalogues. They are menu-driven, and require no further comment in this manual. The Palaeontological Curator holds a short manual on the procedures involved in producing a catalogue.

1. **Exit to previous menu.**
2. **Selected recorded species** --- a list of all species in the database within a selected higher taxonomic category.
3. **Selected recorded specimens** --- a list of CPC specimens and the taxonomic names attached to each, selected the same way.
4. **Selected references** --- all the references for the selected taxonomic group.
5. **Catalogue** --- the report program which assembles in an ASCII file the records for a selected taxonomic group, ready for editing into a publishable catalogue.
6. **Go temporarily into Unix.** After running a report program, one can use this option to execute a variety of Unix commands, e.g. after running a report program to rename the file produced prior to running the same report again for a different batch of data. Return to the Catalogue Reports Menu by entering **exit.**

CURATORIAL REPORTS MENU

This menu permits a variety of report programs, having to do with specimen handling, documentation and control, to be run. Their use will be explained on pp. 28-33.

1. **Exit to previous menu.**
2. **Ordered list of all recorded specimens.** Simply a list of CPC specimens which have been entered into PALEO -- see p. 28.
3. **Full data records for selected registered specimens.** This is designed to provide hard copy of the data for selected sets of registered (CPC, F, etc.) specimens -- see pp. 28-30.
4. **Production of specimen labels.** A report program designed to produce labels for registered specimens in formal collections (CPC, F, etc.) -- see pp. 30-31.
5. **Palynological register for specified MFP numbers.** This is designed to provide hard copy of the processing form for palynology (Forms Menu, Option 9) -- see pp. 31-32.
6. **Selected data for specified MFP numbers.** This produces a set of locality and processing data formatted for insertion in an Excel® spreadsheet -- see pp. 31-32.
7. **Conodont labels for CPC specimens.** A file is produced which, suitably processed, will produce a master for making conodont slide labels (specifically for CPC specimens) -- see pp. 32-33.
8. **Foram labels.** As for Option 7, but designed for unpublished foraminiferan slides -- see p. 33.
9. **Foram labels for CPC specimens.** As for Option 8, but specifically for CPC specimens -- see pp. 32-33.
10. **Go temporarily into Unix.** The same option as in the Catalogue Reports Menu, see above. Return to the Curatorial Reports Menu by entering **exit.**

SQL*Plus

Option 5 runs the command-driven system for accessing information in databases. It can be used for any AGSO "public" database, not just PALEO -- e.g. it can be used to obtain latitude and longitude for wells registered in PEDIN. For examples on how SQL*Plus can be used see chapter 8 in AGSO Record 1993/81 (referred to above). For further discussion see pp. 34-38.

FORMS FOR INDIVIDUAL TABLES

This menu, entered from Option 8 in the Forms Menu, is designed to give direct access to tables, including lookup tables, most of which are otherwise accessed from other Forms, such as *PALENTRY* (see the Forms Menu, above). It actually has 14 options, although only 10 can be displayed at once.   Use the up or down cursor keys to see the rest (yes, you can go backwards through the menu: it acts as a continuous loop). The various options, and the pages on which they are detailed, are:

1. **Exit to previous menu.**
2. **Run the acquisition form** -- (p. 17). A view of all fields in the *ACQUISITION* table, recording when and by whom samples were collected &/or donated.
3. **Run the age form** -- (p. 17). All fields in the *AGE* table.

4. **Run the formation form** -- (p. 18). All fields in the *FORMATION* table -- i.e. geological provenance.
5. **Run the identification form** -- (p. 18). All fields in the *IDENTIFICATION* table, in which faunal lists can be assembled with the assistance of the *SPECIES* table.
6. **Run the location form** -- (p. 18). All fields in the *LOCATION* table -- i.e. geographic provenance.
7. **Run the map form** -- (p. 19). All fields in the *MAP* table -- map name, code, scale, etc.
8. **Run the publication form** -- (p. 19). All fields in the *PUBLICATION* table -- i.e. bibliographic data for any publication in which a registered sample is cited.
9. **Run the publishedin form** -- (p. 20). All fields in the *PUBLISHEDIN* table -- i.e. details of where in a publication a sample or specimen is cited &/or illustrated.
10. **Run the species form** -- (pp. 20-21). All fields in the *SPECIES* table -- i.e. the name and authorship of a taxon, plus its systematic position and any comments on synonymy etc.
11. **Run the storage form** -- (pp. 20-21). All fields in the *STORE* table -- i.e. where a sample or specimen is normally kept.
12. **Run the specimen form** -- (p. 22). All fields in the *SPECIMEN* table -- i.e. sample/specimen-specific data -- e.g. preservation, data reliability and history, taxonomic status.
    The key form in registering a sample or specimen, this also gives access to several tables: *FIELDNOTES* (p. 22), *ACQUISITION,* and *ECOLOGY* (pp. 22-23). It is also designed to give access to the *RADIOMETRY* table, yet to be set up, dealing with radiometric age determinations.
13. **Run the corlo form.** This is essentially of curatorial interest, holding information requiring "cleaning" because it was not cleanly transferred from an earlier version of PALEO operating under the "Image" system on an HP1100 computer. Explanation is unnecessary.
14. **Run the ocnlo form.** As for Option 13.

USING THE FORMS

In this section the use of the various Forms available for data entry and retrieval will be described. Access to these Forms is from Option 2 of the Main Menu, and from Option 8 of the Forms Menu (see pp. 5-6). Keystrokes and commands (other than very special ones) will not be explained here, but in Appendix 2, *Oracle Commands, Procedures & Keystrokes* (pp. 41-46).

Help line, error messages.

A general aspect of Forms, applicable in nearly all of the PALEO ones, is that, for each field on the Form, a brief message is displayed in the "help line" at the bottom of the screen as the cursor alights in that field. This may be instructions on what data should go into that field, or on what table is linked through that field. Should an error occur, the normal message line will be replaced by a brief error message. Press <Alt F1> [**display error**] to try and find out what has gone wrong. More generally, <Esc + h> will display a help screen where one is available.

INITENTRY & PALENTRY (FORMS MENU OPTIONS 2, 3)
Field, sample and specimen data

The Forms *INITENTRY* (for initial sample data entry) and *PALENTRY* (for full specimen data entry) are composites of selected fields from several tables, all fitted respectively on one or two screens. The Form *INITENTRY* is designed for the entry and display of sample and laboratory data of relatively limited scope, while *PALENTRY* is designed for the entry of more extensive data, especially for published specimens.

As the procedures for using the two Forms are essentially the same, those will be dealt with for both, before discussing aspects of the individual Forms.

In both, only a single record can be entered while staying within the Form, but access to appropriate individual Forms is easy, and enables entry of series of records. Similarly, only one record can be displayed at a time, but multiple records retrieved following a query can be easily and quickly examined by using the up and down cursor arrows while the cursor is within the first part of the Form.

There is an initial "help" screen, that for *INITENTRY* being shown at right, which lists the tables from which fields are displayed, and also explains the keys used in moving through the form.

In both, there are some "display only" fields from linked tables, and especially in *INITENTRY* some fields have a truncated display (which simply means you cannot immediately see all the text). One can scroll through the display with the left and right cursor arrows, *but* one can also display the whole field separately, using the following procedure.

```
         PALEO Database - Initial entry form
───────────────────────────────────────────────────
      This initial data entry form is a multi-block entry form.
        Information entered goes into the following tables:

                        specimen
                        location
                       acquisition
                        formation
                          age
                     identification
                       publishedin

   Access the underlying table from any field by pressing <NEXT PRIMARY KEY>.

     To navigate forwards through the form, just press the <NEXT FIELD> key.
   To go right back through the form, use <PREVIOUS FIELD> or <PREVIOUS BLOCK>.

            To exit this help screen, press <ENTER>  ■
───────────────────────────────────────────────────
Count: *0                                          <Replace>
```

With the cursor in the truncated field:

▸   Press **<Esc + e>** [edit].

see: the whole field displayed in a separate window. While in the window, the up and down cursor arrows allow one to move quickly from line to line, speeding any editing.

▸   Exit the window with **<F10>**.

One peculiarity of the way the Forms INITENTRY and PALENTRY are constructed is that the normal method of moving backward with **<Ctrl + h>** *includes the "Help Screen" as a field! Another* **<Ctrl + h>** *takes you to the last field in the first block (SPECIMEN).*

DATA DISPLAY -- QUERY MODE

The whole Form can be queried *only* from within the first block (corresponding to the *SPECIMEN* table). *See pp. 44-46 for query procedures.* Once a sample record has been retrieved, its data are displayed throughout the Form. It is then possible to move the cursor to other parts of the Form (*see p. 43 for cursor control*). While it is possible to query those parts individually, that is a pointless exercise, since the result of a query still corresponds to the record which remains displayed in the rest of the form.

Multiple records retrieved (see also p. 46)

If a query retrieves several records which meet the query conditions (remember, they can only be set within the initial *SPECIMEN* block), this will be shown by a down arrow (v) in the status line at the base of the screen.

With the cursor in the initial block, you can scroll through the records with the cursor keys (and the status line will display two arrows, ^ and v, and the number of records scrolled through, until you reach the last record, when only the one arrow (^) will remain; beyond that the form is empty!).

With the cursor in another block, you cannot scroll through successive full records, *but ---*

In the *IDENTIFICATION* and *PUBLICATION* blocks (in both Forms the former is headed "FOSSIL") it is possible to have several entries for each main record. In *IDENTIFICATION* this may be several taxa from a sample, or successive names applied to the same specimen. In *PUBLICATION* there may be several papers citing the sample or specimen (two can be displayed at once in both Forms, on successive lines).

To check whether there are undisplayed taxa or publications for a particular record, move the cursor to the appropriate block. If there are more records waiting to be displayed, a down arrow will reappear in the message line. Scroll through to examine.

Access to linked Forms

From both Forms it is possible to move to individual Forms which can display additional information. To which, and from where in the Form, is discussed for each in turn. The details of how to do it are given under *Moving between Forms* on p. 43.

DATA ENTRY -- Single sample

"Reference Number"

When you enter the Form, the cursor will appear in the first field, *acronym*. This and the next two fields are combined to form the fourth field, which the database system knows as *Refno*, short for "Reference Number". This is a *key field*, which holds together the components of a record. Because of this, *data MUST be entered in this field.* This *Reference Number* may be a field or

sample number, or the number under which a specimen is registered in one of several specific collections. In the latter case, the collection is referred to by its acronym - e.g. MFP, CPC, F, V.

Procedure:

▸ If there is an acronym, type it in the first field; if not, press **<Enter>**

▸ If an acronym has been entered, enter the specimen number in the second field, *which is strictly a numeric field* (the database name for it is *num*). *Simple numeric sample numbers (e.g. eight-digit field numbers like 74284301) should be entered here.*

▸ If there is a suffix (e.g. a part letter or number), enter it in the third field (*suffix*). *If using a number, start it with a dash or slash — i.e. - or / — so that it is recognisably separate from the main number; there is room for up to two digits.*

▸ *If* there are entries in the previous fields, they will automatically be combined in the fourth field (*Refno*).
If not, a number *must* be entered here.

Composite sample numbers such as "20NG7251", which do not readily lend themselves to subdivision into acronym + number, can be successfully entered only here.

Field Number

If the *Reference Number* is a field or locality number (or alphanumeric code, such as 20NG3124 or GEO367) then repeat it in the *Field No.* field, so that the record will be retrieved if a query is done on that field (this is also important later if there are published specimens registered with their own numbers, but from that locality, since the connection between the two numbers will not be lost).

Other data

Having entered the number, work through the Form adding data, remembering that some fields (e.g. *general remarks* in *INITENTRY*) may be longer than they look.

Truncated fields. In such a truncated field, be a bit careful: the program is normally set to Replace characters, so when you reach the last space in the field, each character you type will replace the one you typed previously. If you know what you have to type in is going to be longer than the display, you can work in the field in a separate window, accessed with **<Esc + e>** and left with **<F10>**. See p. 44 for details.

Correcting errors. To correct errors, or modify text which will not fit in a field, use the left and right cursor keys to move through the field, and toggle between Insert and Replace Text modes with **<Insert>**.

Accessing other Forms. You will also come to fields which require that you access a separate single-table Form which is linked to the main one by a common field (often some sort of record number).

An example, common to both Forms, of how to do this is to enter the *Maprefno* (i.e. map reference number):

▸ From the *Maprefno* field, access *MAPS* with **<Alt + F3>** [next primary key].
In this case, as the help message will show, you are already in Query Mode. Follow instructions to establish the reference number for the map.

▸ If your query retrieves a map reference number, return with it to the original Form with **<Alt + F3>**.

▸ If your query retrieves no data, it is because the map has not yet been entered in the database.
  ▸ press **<Alt + F10>** to [cancel] Query Mode,
  ▸ enter the map data,
  ▸ press **<F10>** [commit],
  ▸ return the new map reference number to the original Form with **<Alt + F3>**.

Multiple entries in FOSSIL, PUBLICATION.   As already mentioned, it is possible for a sample or specimen to have more than one entry in these blocks.

Procedure:

▸   Place cursor on the already-displayed species number or publication number;

▸   press <F6> [insert record]; the field (and associated "display only" fields) will be cleared;

▸   enter the new number (type it in if you already know it, otherwise go to the appropriate individual Form in the way described under *Accessing other Forms*, above, establish the correct number, and return with it to the main form);

▸   press <F10> [commit].

Repeat as necessary.

Committing record.   For more detail, see p. 44.

▸   When the record is complete, press <F10> [commit].

Error message on committal -- Oracle unable to insert data.

If, when you commit the record, you get an error message that the record cannot be committed because of a duplicate value, this normally means that the sample or specimen number you entered in the *Refno* field is already in the database. *When you are not sure that a sample or specimen number is new, it pays to check before starting data entry: query under Refno (see p. 9).*

Escape from the error is possible, but will probably waste the effort you have put into typing all the data unless you are prepared to put a bit more effort into correcting its cause:

Procedure:

▸   Press <Alt + F1> [display error] to see if the full error message is enlightening - it is conceivable there is a different cause, which can be easily rectified without loss of data.

▸   If the cause is an existing duplicate record, then go to the *Refno* field with <End>.

▸   If you have been entering a set of records, scroll back to see if the one you have just tried to commit is already there (you may just have forgotten to change the *Reference Number*).

  ▸   If you <u>have</u> forgotten to change the number, do so and press <F10>.

  ▸   If the second record is strictly a duplicate (perhaps you lost track of what you had already done?), then make sure it is the one displayed, press <Alt + F4> [clear record], and <F10> to make sure everything is fixed. If that doesn't work, try <Alt + F6> [delete record] in place of <Alt + F4> (and don't forget the <F10>).

▸   If you cannot find a duplicate record this way, then press <F7> [enter query]; you will be asked if you want "to commit the changes you have made".

▸   Press <n> for "no".

▸   Type the sample or specimen number in the appropriate place, and press <F8>.

▸   Check the result of your query. You may find the displayed data show some differences, although this may only be a matter of wording. Make any necessary corrections or additions (don't *assume* the data you originally tried to enter is better!), and press <F10>.

If it is a case of identical numbers for different samples or specimens, then the answer to your problem lies outside the database!

DATA ENTRY -- multiple samples

If you have a series of samples to enter which share common data (e.g. they come from closely spaced intervals on a measured section, have the same age, etc.), then the first record can act as a template for the others, using *Record duplication* (see p. 46). However, you cannot do this within the confines of the single composite Form, but one way or another must go to the linked individual Forms.

Procedure:

▸ Commit the first record, and return the cursor to the first part of the Form.

▸ Press <Alt + F3> to go to the *SPECIMEN* Form.
See: the data already entered for the first record, automatically displayed.

▸ Press <F6, F4> [**create record, duplicate record**] --- *this step is vital; do not change the displayed data until you have done it, or you will simply change the original record.*

▸ Now edit the displayed duplicate, *including the sample number.* If only the sample number is to change, then *be sure to press* <Enter> *to move beyond the "Refno" field.*

▸ Press <F10> [**commit**].

▸ Repeat for all the samples.

▸ Press <Alt + F10> [**cancel/exit**] to return to the original composite Form.

▸ Move to the next section of that Form with <Home>. The original record remains displayed there.

▸ Repeat the above procedure, and continue doing so until all data have been entered.

Many records involving duplication.   If you have more records than can comfortably be entered at a single sitting, there are two tactics possible, both involving the use of Query Mode.

1) Use the above method, but keep careful track of the stage you have reached at the end of each session. At the beginning of the next session, start by using Query Mode to once more display the first record, then move within the composite Form to the appropriate block, and proceed as above.

2) Enter the first record in full, but then instead of working through *INITENTRY* or *PALENTRY* return to the Forms Menu, select the Tables Menu option, and use the individual Forms. Within each, enter a Query to display the original record, then proceed just as above. Again, it is important to keep track of what you have done, and in this method it is simpler to check that by simply querying each Form using appropriate wildcards (see p. 45).

INITENTRY (FORMS MENU OPTION 2)

The screen appearance is shown below, and beside it the names of the individual tables for which Forms can be accessed from the main Form.

-- *SPECIMEN*
-- *ECOLOGY*
-- *ACQUISITION*
-- *STORAGE*
-- *LOCATION*
-- *MAPS*
-- *FORMATION*
-- *AGE*
-- *IDENTIFICATION*
-- *SPECIES*
-- *PUBLICATION*

There is no direct access to the *CITATION DETAILS* Form ('Publishedin' Table).

The first line of the display comprises computer-generated data: the username of the person who first committed the record, the date on which that was done (both derived from the login procedure), and the number assigned by the computer to that record. These fields can only be entered when the Form is being queried.

The several "display only" fields cannot be entered or queried. These are:

-- Collector and date (tied to the field *colldnrno*).

-- Genus, subgenus, species and subspecies (tied to the field *species number*).

-- Publication author and date (tied to the field *pubno*, displaying the 'publication number').

Access linked Forms --	from --	see pages --
SPECIMEN	all fields on the first three lines *except environ't.*	22
ECOLOGY	*environ't.*	22-23
ACQUISITION	*colldnrno.*	17
STORAGE	*access to storage data.*	21
LOCATION	all fields in the 5-line block headed "COUNTRY/OCEAN".	18
MAPS	*Maprefno.*	19
FORMATION	all fields in the two-line block headed "BASIN/PROV".	18
AGE	the line headed "PERIOD".	17
IDENTIFICATION	*FOSSIL: group/s.*	18
SPECIES	*species number.*	20-21
PUBLICATION	the section headed "PUBLICATIONS:".	19-20

Procedure:

▸   press <Alt + F3> [next primary key]

Unless on-screen messages instruct otherwise, return to the main Form as easily:

▸   press <Alt + F10> [cancel/exit]

There is one table and associated Form which has yet to be set up -- *RADIOMETRY*. It is envisaged that it will relate radiometrically and biostratigraphically determined ages for samples, and will also be a link to databases such as OZCHRON. Access will be from *sampled for radiometry?*

Notes on individual fields:

Some of the fields in *INITENTRY* have specific requirements as to what or how data should be entered. The same applies to individual linked Forms as well, of course; to check those refer first to the discussion of *PALENTRY* below (that Form encompasses many of the individual ones), then to the sections on the individual Forms.

environ't -- The message line displays a key for entries in this single-character field:

M = marine   S = saline   F = freshwater   L = lacustrine   E = estuarine   T = terrestrial

Statistical data for environmental assessment of foraminiferal samples can be entered in the *ECOLOGY* Form accessible from this field.

latitude, longitude -- In this Form, must be entered as *decimal degrees*. Unless you *know* they are more accurate, do not enter more than 4 decimal places. The default settings for hemisphere are 'E' and 'S'; alter if necessary.

metric grid ref -- Two fields, actually: the first is for the 2-letter international zone code (if you know it), the second is a 6-digit numeric field. DO NOT insert a period between the eastings and northings, but DO make sure the components of the reference are in that order. DO NOT enter references to any other grid system (e.g. the old Australian 10,000 yd grid) here.

well, depth -- Where possible, a well name should be the same as in PEDIN (e.g. "BMR Huckitta 6"). The two *depth* fields are for core, etc., and refer (in that order) to the top and bottom of the interval; enter the numbers (in *metres*) to the appropriate number of decimal places.

basin/province -- Spell out whether it is a Basin, Sub-basin, or other geological province (e.g. Fold Belt).

Form'n -- Abbreviated form of *Formation*. Spell out whether it is the Woop-woop **Formation** or the Black Stump **Sandstone**.

Period -- If only one, enter it in the first field; if a range, the oldest goes in the first field, the youngest in the second. *Keep strictly to this -- it's important for querying.*

Fossil group -- Type here the informal name of the major group (e.g. brachiopod, trilobite, foram) to which the taxon belongs. For samples with many different taxa, enter here a list of the groups (that does mean that wildcards are essential during querying, but the solution to *that* problem would make the database quite unwieldy).

identified by, on -- This refers to unpublished taxa, and sheets home the responsibility for identifications. Unfortunately it cannot cope with different people identifying different components of a sample at different times. Such information will have to go in the general remarks field in *SPECIMEN*.

PALENTRY (FORMS MENU OPTION 3)

Below are shown the two screens, and beside them the accessible individual Forms; details on that access follow below the illustrations. *Tip: You can move quickly between the two display screens by using <End> and <Home> to move between the top block of Screen 1 and the bottom block of Screen 2. This is very useful when examining displays of multiple records.*

The username, entry date and record number assigned on committal are displayed in a separate box in the top right corner - as with INITENTRY, these fields are only accessible in Query Mode.

-- *SPECIMEN*

-- *FIELDNOTES*

-- *ECOLOGY*
-- *ACQUISITION*
-- *IDENTIFICATION*
-- *SPECIES*

-- *PUBLICATION*
-- *CITATION DETAILS*

-- *LOCATION*
-- *MAPS*

-- *FORMATION*

-- *AGE*

Access linked Forms --	from --
SPECIMEN	any field in the block labelled SPECIMEN *except field refno*, *environment* and *collector/donor No.* -- see p. 22.
FIELDNOTES	*field refno* -- see p. 22.
ECOLOGY	*environment* -- see pp. 22-23.
ACQUISITION	*collector/donor No.* -- see p. 17.
IDENTIFICATION	any field in the block *FOSSIL except species* and *Conodont element*. Note that the fields in which a species name is displayed are "display only" -- see p. 18.
SPECIES	*species* (which displays the **Species Number**) --- or indirectly from the *IDENTIFICATION* Form -- see pp. 20-21.
PUBLICATION	*No.* in the block labelled PUBLICATION -- see pp. 19-20.
CITATION DETAILS	anywhere in the block labelled PUBLICATION *except No.*, which displays the **Publication Number**. The Form displays the *PUBLISHEDIN* table -- see p. 20.
LOCATION	anywhere in the block labelled COUNTRY/OCEAN *except map refno* -- see p. 18.
MAPS	*map refno* -- see p. 19.
FORMATION	anywhere in the block labelled BASIN/PROVINCE -- see p. 18.
AGE	anywhere in the block so labelled -- see p. 17.

Procedure:

▸   press **<Alt + F3>** [next primary key]

Unless on-screen messages instruct otherwise, return to the main Form as easily:

▸   press **<Alt + F10>** [cancel/exit]

Notes on individual fields:

As with *INITENTRY*, some of the fields in *PALENTRY* have specific requirements as to what or how data should be entered. The same applies to individual linked Forms as well, of course, but most of them are actually incorporated in this present Form. For many fields the help line provides all the information you need (*so do please look at it!*), otherwise, see below or in a few cases under the descriptions of the individual Forms.

old reg'd No. -- For recording a previous collection number. An example would be a specimen from the F collection which is renumbered in the CPC collection for publication. The F number becomes the old registered number, the CPC number the new one. For correctly entered records, this is done automatically under Forms Menu Option 4 (see pp. 23-24).

type status -- For published specimens, to specify whether they are merely cited, or figured, or some sort of Type. Follow the format in the help line.

configuration -- What the specimen looks like, as an aid to finding it in our vast collections.

maturity -- Enter here the degree of maturity of the sample in terms as brief as possible without being cryptic.

Amoco TAI -- Thermal Alteration Index number or range, according to the Amoco scheme.

CAI -- Conodont Alteration Index number or range.
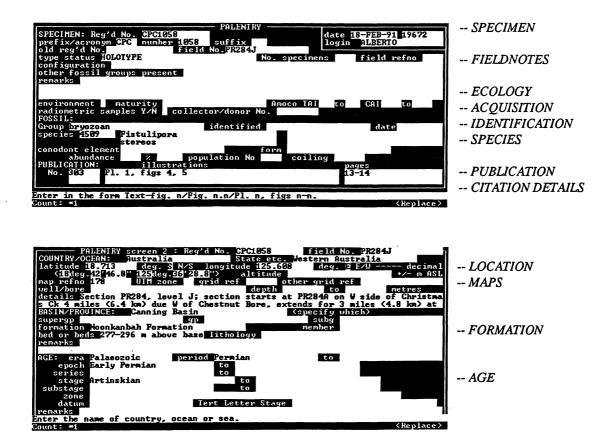
Group -- Type here the *informal* name of the major taxonomic group (e.g. brachiopod, trilobite, foram) to which the taxon belongs. For samples with many different taxa, enter here a list of the groups (that does mean wildcards must be used during querying, but the solution to *that* problem would make the database quite unwieldy).

identified by, on -- This refers to unpublished taxa, and sheets home the responsibility for identifications. Unfortunately it cannot cope with different people identifying different components of a sample at different times. Such information will have to go in the general remarks field in SPECIMEN.

Abundance -- The four fields on this line have to do with various ways of expressing relative or absolute abundance of a taxon in a sample:

Abundance is an estimate of the relative abundance of the taxon in the sample, simply using the initials *vr* = 'very rare', *r* = 'rare', *c* = 'common', *vc* = 'very common' and *ab* = 'abundant';

% is the percentage that taxon is of the total sample;

population No. is the number of species in the sample;

coiling is the % of individuals of a particular taxon which are sinistrally or dextrally coiled - express this as, e.g. "10%S" or "45%D".

latitude, longitude -- In this Form, while the correct format is *decimal degrees*, there is provision made on the next line for entry as degrees, minutes and seconds (the last two can be decimal numbers). A resident routine will convert them to decimal degrees, *which is the only way AGSO's Oracle databases store that information.* Unless you *know* they are more accurate, do not enter more than 4 decimal places.

NOTE: If you have to change the latitude or longitude, and only have the correct numbers as degrees, minutes and seconds, *you must first clear the decimal degree figures* with <Ctrl + f> or <Esc + t>. If you do not, the change will not be recorded. Alternatively, first use a calculator, and then simply edit the decimal degree numbers!

altitude -- Relative to sea level, in metres; submarine samples should therefore be entered as *negative* numbers. This field does NOT refer to well data, except (where appropriate) to the collar altitude.

UTM zone, grid ref -- Two fields, of which the first is for the 2-letter international zone code (if you know it), the second is a 6-digit numeric field. DO NOT insert a period between the eastings and northings, but DO make sure the components of the reference are in that order. DO NOT enter references to any other grid system here.

other grid ref -- This field is for non-metric or non-standard grids, and the type of grid should be indicated. Thus a reference to the Australian 10,000 yard grid could add "yds" to the number.

well/bore, depth -- Where possible, a well or bore name should be the same as in PEDIN. The two *depth* fields are for core, etc., and refer (in that order) to the top and bottom of the interval; enter the numbers (in *metres*) to the appropriate number of decimal places.

basin/province -- Spell out whether it is a Basin, Sub-basin, or other geological province (e.g. Fold Belt).

supergp, gp, subg -- Put the name in the correct field, but do not add the rank. Thus, the Catombal Group would be entered just as "Catombal" in the *gp* field, NOT in the *supergp* field.

formation -- Spell out whether it is the Woop-woop **Formation** or the Black Stump **Sandstone**.

member -- Treat as for the *supergp* etc. fields.

bed or beds -- Under the current Australian Guide, informal units are "beds", but a formal "Bed" is allowed. Add the appropriate one to the name of the unit.

period, epoch, series, stage, substage -- If only one, enter it in the first field; if a range, the oldest goes in the first field, the youngest in the second. *Keep strictly to this -- it's important for querying.* Remember that time terms use "Early" not "Lower", etc., and that using these modifiers at all has implications for data retrieval tactics.

zone -- Where possible, include the generic name, even if in abbreviated form. If the possible age covers a series of zones, then indicate that.

Forms Menu, Options 4 to 7: Because the INITENTRY and PALENTRY Forms give access to many tables which can also be displayed individually as Forms accessed through Option 8, it is appropriate to discuss the details of that Option before Options 4 to 7.

TABLES MENU (FORMS MENU OPTION 8): Access to individual tables

As noted earlier, Option 8 places you in the Tables Menu. From this Menu Forms are available which display full data for individual Tables. Because most of these individual Forms can be accessed from the two composite Forms *INITENTRY* and *PALENTRY* (as well as some others), they will be discussed here, before the remaining Forms Menu options. Note that in many cases the same fields are displayed as in those two forms, so for comments on individual fields, consult the descriptions under, e.g., *PALENTRY*.

ACQUISITION (TABLES MENU OPTION 2)

This is a straight-forward Form which can display four records at a time. To each new record the computer automatically assigns a unique collector/donor number, placed in the *colldnrno* field.

The fields are obvious, but note that the date is best entered with the year (in full) first.

As explained in the help panel, the Form is programmed to be accessed in Query Mode. The message assumes you have entered from another Form, so if you have come from the Menu ignore the comments on carrying information across, or you will get an error message.

AGE (TABLES MENU OPTION 3)

This Form displays age data for two records on one screen. The peculiarities of the various fields have already been described for the *PALENTRY* Form (see p. 16).

Remember, *Reg'd No.* may be a sample number or a catalogue number (including the acronym).

FORMATION (= Stratigraphy) (TABLES MENU OPTION 4)

As with the *AGE* Form, this displays two records at a time, and all the fields are as on the *PALENTRY* Form. See p. 16 for detailed comments.

IDENTIFICATION (= Species Identification) (TABLES MENU OPTION 5)

Again, two records are displayed, and the same fields are here as on the *PALENTRY* Form, just differently arranged - see pp. 14-16.

You can access the *SPECIES* Form from the *Species* field; when that field displays a species number, the name of the species is displayed on the next two lines.

LOCATION (= Specimen Locality) (TABLES MENU OPTION 6)

In this Form, also, two records can be displayed at once, and the fields are as displayed in *PALENTRY* -- for notes on individual fields, see pp. 13, 16.

Access the *MAPS* Form from the *Map refno* field.

MAPS (TABLES MENU OPTION 7)

The *MAPS* Form is entered in Query Mode (see comments on aspects of this in the description of the *ACQUISITION* Form on p. 17).

In this Form up to 13 records can be displayed on the screen. The fields are:

MapID - i.e. *Map Refno.*

```
                                    MAPS
MapID  Name                         Scale      Map No.  Remarks
271    ABUDDA LAKES                 1:100,000  5551
12     ALICE SPRINGS                1:100,000  5650
14     ALICE SPRINGS                1:250,000  SF53-14
303    AUGATHELLA                   1:250,000  SG55-6
24     BAIRNSDALE                   1:100,000  8422     Edn 1, 1976
25     BAIRNSDALE                   1:250,000  SJ5507   Edn 1, 1976
285    BARALABA                     1:250,000  SG55-4
323    BATEMANS BAY                 1:100,000  8926
29     BATHURST                     1:250,000  SI55-8
288    BOHEMIA                      1:100,000  4160     Mt Ramsay SE 52/9
39     BOULIA                       1:250,000  SF54-10
314    BOULIA                       1:100,000  6852     Boulia SF54-18 part
40     BOWEN                        1:250,000  SF55-3
You are starting in QUERY mode.          Press <EXIT><EXIT> to quit this form.
 - Query on at least the map name. Scroll to the required entry (if found).
 - To carry the required Map ID across, exit the form with <NEXT PRIMARY KEY>.
 - To add a new record, use <EXIT>, <INSERT RECORD> and finally <COMMIT>.
FRM-40400: Transaction complete -- 1 records posted and committed.
Count: 13          ^ v                                        <Insert>
```

Name - the map name, automatically capitalised. *Spell such words as "Mount" in full.*

Scale -- enter as, e.g., 1:250,000, NOT 1:250000 (this avoids errors over how many zeros).

Map No. -- the map identifier, e.g. SF53-14, or 6551 (depending on scale).

Remarks -- here can be noted the edition, date of map, or in the case of a map to 1:50,000 or 1:100,000 scale the 1:250,000 map within which it falls.

PUBLICATION (TABLES MENU OPTION 8)

```
                        Publications
Pubno 416                              Date 1956, May
Authors DICKINS, J.M.
   Title Permian pelecypods from the Carnarvon Basin, Western Australia

   Source Bureau of Mineral Resources, Australia, Bulletin 29; 42 pp, 6 pls


Pubno 417                              Date 1965, December
Authors DICKINS, J.M., & SHAH, S.C.
   Title The pelecypods Undulomya, Cosmomya and Palaeocosmomya in the Permian of
 India and Western Australia
   Source Journal of the Geological Society of Australia, vol. 12, pt 2, pp 253-2
60, pls 17-17
You are starting in QUERY mode.
 - Query on authors, publication, date. Scroll to the correct entry (if found).
 - To carry the required data across, exit this form with <NEXT PRIMARY KEY>.
 - To add a new record, use <EXIT>, <INSERT RECORD>, and finally <COMMIT>.
               Press <EXIT><EXIT> to quit this form.
Count: 9       ^ v                                      <Replace>
```

Accessed in Query Mode (the same comments apply as for *ACQUISITION*, see p. 17), this Form can display two records.

The individual fields, and peculiarities of their use, are:

Authors -- Everything is automatically capitalised; multiple authorship should be in standard Reference List format - e.g. DICKINS, J.M., THOMAS, G.A. & JONES, P.J. Use full first names only where considered essential to avoid ambiguity.

Date -- Because only the year may be known, this field is not a "date" field governed by strict rules, but a "character" field. Enter as much as is known, but for ease of searching it is best to start with the year, *in full.*

Examples would be: 1879, March
                    1979, 23 Nov.

Title -- You will be startled the first time you enter this field! A separate enlarged "window" for data entry or update will appear.

► Type the title of the article or book.

► To exit the "Title" window *and save new text or any changes to existing text therein*, press <F10> to [commit] the data.

The cursor will then move to the next field.

Source -- Type in the Journal name or book publisher's name, pagination, etc. -- i.e. the full bibliographic works. Then <F10> to commit all the data for the Form.

PUBLISHEDIN (= Citation Details) (TABLES MENU OPTION 9)

```
╔══════════════════════════════════════════════════════╗
║                  CITATION DETAILS                      ║
╠══════════════════════════════════════════════════════╣
║ Registered No. CPC1818                                 ║
║ Publication No. 12                                     ║
║               ARCHBOLD, N.W.              31/12/1986    ║
║               Studies on Western Australian Permian brachiopods. 6 The gener ║
║               a Strophalosia King, 1844, Heteralosia King, 1938 and Echinalo ║
║               Proceedings of the Royal Society of Victoria, 98(3): 97-119.   ║
║ Illustrations                                          ║
║     Page No.  113                                      ║
║                                                        ║
║ Registered No. CPC1818                                 ║
║ Publication No. 67                                     ║
║               COLEMAN, P.J.               31/8/1957    ║
║               Permian Productacea of Western Australia.║
║                                                        ║
║               Bureau of Mineral Resources, Australia, Bulletin 40. ║
║ Illustrations Pl. 18, figs 15-16, pl. 19, fig. 1       ║
║     Page No.  116                                      ║
║               Press <EXIT> to quit the form.           ║
╚══════════════════════════════════════════════════════╝
 Count: *2                                    <Replace>
```

Again, two records can be displayed; for each, the central part comprises truncated "display only" fields from the *PUBLICATION* table, displaying the author, date, title and source of the reference.

Help messages show how illustration and citation data should be typed - please follow them!

SPECIES (TABLES MENU OPTION 10)

A single-record Form entered in Query Mode (see previous comments), the cursor alighting in the *Genus* field.   Most of the fields should be obvious, and have been chosen after consultation to reflect the most widely used suprageneric categories.

```
╔══════════════════════════════════════════════════════╗
║                      SPECIES                           ║
╠══════════════════════════════════════════════════════╣
║ Species Number 8297        Phylum Brachiopoda          ║
║          Class Articulata  Subclass                    ║
║     Superorder             Order  Strophomenida        ║
║      Suborder  Productidina Superfamily Productacea    ║
║        Family  Marginiferidae  Subfamily               ║
║ Other category                                         ║
║          Genus Retimarginifera                         ║
║       Subgenus (                  )                     ║
║        Species perforata                               ║
║     Subspecies                                         ║
║ Species author WATERHOUSE, 1978                        ║
║ Conodont elem.                                         ║
║ Remarks                                                ║
╠══════════════════════════════════════════════════════╣
║ You are starting in QUERY mode.    Press <EXIT><EXIT> to quit this form. ║
║ - Query - try genus first. Scroll to correct entry (if found). ║
║ - To carry the required info across, exit this form with <NEXT PRIMARY KEY>. ║
║ - To add a new record, use <EXIT>, <INSERT RECORD> and finally <COMMIT>. ║
╚══════════════════════════════════════════════════════╝
 Count: *1                                    <Replace>
```
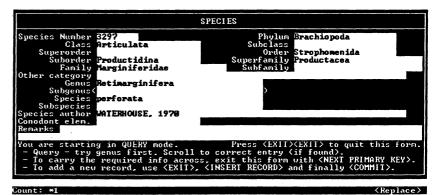
It is important that the classification be recorded (if necessary with comments on whose classification is being followed, although normally the Treatise on Invertebrate Paleontology is the standard). That way, taxonomic research can be assisted by being able to determine what related material for a particular taxon we have in our collections.

Other category is for entering taxonomic categories not specifically catered for -- spell out what the category is!

Species author -- For reasons given below, it is important that a standard format be followed:

-- Capitalisation is automatic, so need not be of concern -- it helps for reliable searching.

-- The author's name is followed by a comma and a space, thus: BLOW, 1959. This follows ICZN Recommendation 22A.

-- For junior synonyms, enclose both author and date in brackets, thus: (BLOW, 1959).   This follows ICZN Recommendation 22B.

-- "cf." and "aff." should NOT be preceded by "sp."

-- A query is placed *after* the item it refers to. If the whole identification is uncertain, this is conventionally printed as "?*A-us b-us*", but in the database enter it as "*A-us? b-us?*".

-- The format for un-named species is "sp.", "sp. indet.", or "sp. A"; do not use "sp. ind.", and restrict "sp. undet." to material which you are confident will be identified in the not *too* distant future, or for quoting from publications.

-- In the case of "gen. indet.", ambiguity (or problems if there are several such in the same paper) can only be avoided by specifying in the "genus" field the *formal* name of the next higher definite taxonomic category, be that Family or even Phylum, thus:

"Cyrtinidae gen. indet.", "Agnostina gen. indet.", etc.

-- Authorship of un-named species is the authorship (and date) of the paper in which they first appear. *This is very important, to avoid possible ambiguities.*

-- Should a published un-named species be referred to subsequently but placed in a different genus, it helps to append the name of the second authority after a semi-colon, thus: "... sp. JONES, 1969; HINZ, 1994". The different generic name will make it a new taxon anyway, but this sets out the history of authorship clearly and succinctly. Of course, a note under "remarks" for both taxa would be even more helpful.

-- Abbreviate the authorship only if absolutely necessary. Start by judicious deletion of spaces, then use *very well-known* standard abbreviations (e.g. "Linn."); as a last resort, use "et al."

Unique index: The Species Number is applied to a unique combination of data in the fields "Genus", "Subgenus", "Species", "Subspecies", "Species author" and "Conodont element". A single character difference in any one of these fields is enough for a new record. This makes careful spelling, and the positioning of commas *and spaces* in the "Author" field, very important.
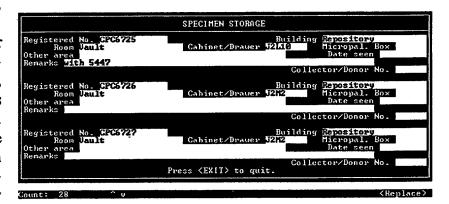
STORAGE (TABLES MENU OPTION 11)

Designed to record where a specimen or sample is stored, the Form will display three records at once. For consistency, fields should be filled in as follows:

Building -- 'Repository' and 'AGSO' (old records will show BMR) are the normal entries.

Room -- 'Vault', 'Room *nnn*' are the norm.

Cabinet/Drawer -- For the present Repository compactus, enter in the form, e.g., 'B1L4' (i.e. run B, compactus 1, left side, 4th drawer down).

Micropal. Box -- The number of the box in which micropalaeontological residues are stored (mostly forams).

```
┌───────────────────────────────────────────────────────────────┐
│                       SPECIMEN STORAGE                          │
│ Registered No. CPC6725                        Building Repository│
│        Room Vault          Cabinet/Drawer J2L10  Micropal. Box  │
│ Other area                                         Date seen    │
│ Remarks with 5447                                               │
│                                            Collector/Donor No.  │
│                                                                 │
│ Registered No. CPC6726                        Building Repository│
│        Room Vault          Cabinet/Drawer J2M2   Micropal. Box  │
│ Other area                                         Date seen    │
│ Remarks                                                         │
│                                            Collector/Donor No.  │
│                                                                 │
│ Registered No. CPC6727                        Building Repository│
│        Room Vault          Cabinet/Drawer J2M2   Micropal. Box  │
│ Other area                                         Date seen    │
│ Remarks                                                         │
│                                            Collector/Donor No.  │
│                   Press <EXIT> to quit.                         │
│                                                                 │
│ Count:  28        ^ v                                <Replace>  │
└───────────────────────────────────────────────────────────────┘
```

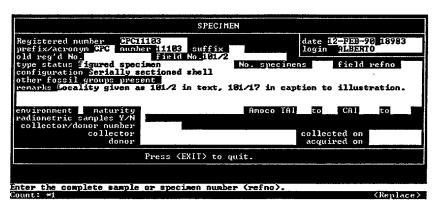*Other area* -- Unusual storage situations, e.g. for very large specimens.

Date seen -- For control purposes, note here the date of the most recent stocktake, or the date when a sample had to be searched for because it was not where expected, and was successfully found (make sure you also record where you found it -- in *Remarks* if that was a temporary location).

Remarks -- Anything not covered in the other fields, which is relevant to the storage and recognition of the sample.

SPECIMEN (TABLES MENU OPTION 12)

This Form displays the key database table in PALEO. Most of its features have been described already, as it is almost identical to the first block in the *PALENTRY* Form (see pp. 8-10, 15-16), including access to other Forms.
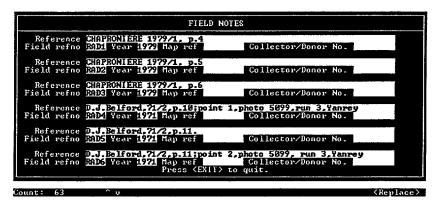
In the Form's top right corner there is a distinct area whose fields are filled automatically, but under some circumstances can be useful for querying. Here are recorded the date (*entry_date*) on which this part of the record was committed (not necessarily when the record was completed!), the record number , and the username (*login*) of the person who logged in to PALEO to enter the record.

If a number is displayed in *collector/donor number* (from which the *ACQUISITION* Form can be reached), so also are the associated data (collector, donor, dates of collection or acquisition).

FIELDNOTES (access from within *PALENTRY, SPECIMEN*)

A six-record display of references to such things as field notebooks, air-photos, unpublished Records, etc.

An entry in *Fieldrefno* is mandatory before data can be entered -- it can be an alphanumeric, not just a number. The other fields are fairly obvious!

ECOLOGY (access from within *INITENTRY, PALENTRY, SPECIMEN*)

This Form cannot be reached directly from the Tables Menu, as the *ECOLOGY* table was designed as an adjunct to the *SPECIMEN* table. A Form specifically for recording the statistical data associated with environmental assessment of foraminiferal samples, some fields have obvious functions, those which do not being:

T -- % of textulariine foraminiferans.

M -- % of milioline foraminiferans.

R -- % of rotaline foraminiferans.

P -- % of planktic foraminiferans.

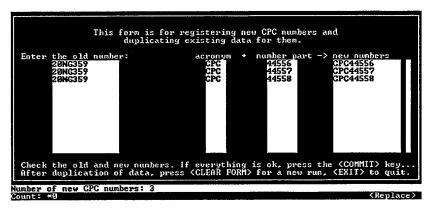*B* -- % of benthic foraminiferans.

number of taxa -- number of foraminiferan taxa in the sample.

sieve fraction -- the sieve size (e.g. "+125") which retained the sample.

The Form is entered in Query Mode, and automatically queries on the *Refno* entry that was displayed in the main Form from which it was accessed. If no data can be retrieved for that entry, then it must be separately entered in *ECOLOGY* before new data can be recorded against it.

CPC ALLOCATION (FORMS MENU OPTIONS 4 & 5)

As an increasing amount of sample data are entered when first obtained, it will become feasible, when specimens from those samples are published, to attach already-entered data to new CPC numbers. It is feasible to do this for one specimen at a time using Query Mode and either the *PALENTRY* Form,

This form is for registering new CPC numbers and duplicating existing data for them.

Enter the old number: acronym + number part -> new numbers
28NG359   CPC   44556   CPC44556
28NG359   CPC   44557   CPC44557
28NG359   CPC   44558   CPC44558

Check the old and new numbers. If everything is ok, press the <COMMIT> key...
After duplication of data, press <CLEAR FORM> for a new run, <EXIT> to quit.

Number of new CPC numbers: 3
Count: *0   <Replace>

or the individual Forms (Forms Menu, Option 8), but that method becomes totally inefficient when a sample or field locality has yielded a number of published specimens. Option 4 provides a simple alternative, specifically for the "marrying" of recorded field data with CPC numbers.

Procedure:

▸ Select Forms Menu Option 4.

▸ Enter in the first field the original sample or field number from which the specimens came.

▸ Enter in the third field the *number* part of the first CPC numbers to be allocated (the *acronym* field automatically displays 'CPC'). The cursor should move to the fourth field.

see: the complete CPC number (except that any suffixes cannot be entered in this form).

▸ After the first CPC number is typed, use the down cursor key, in this or the next single-character field, to add consecutive numbers until you have as many as are needed for that sample or locality. It is possible to start a different block of numbers for the same locality simply by moving the cursor back to the *number part* field, and entering a new number before resuming scrolling.

▸ Check that you've got it right - you can use the up cursor key if necessary.

▸ Move the cursor to the final single-character column (if not already there) at the last entry.

▸ Press <F10> to commit the program to its next phase (copying the data).

You will now be taken in turn to the Form for each of the four basic tables: *SPECIMEN, LOCATION, FORMATION* and *AGE*. For each, the ***original sample data*** will be displayed for you to check:

▸ Any errors or omissions can be corrected (and committed with <F10>) in that table for the original record.

▸ Once you are satisfied, press <F4> [duplicate record].

see: each of the CPC numbers with the data attached, as a succession of records, *for that table.*

▸ Scroll through the records, and make any additions or alterations to the data for individual CPC specimens (e.g. type status in *Specimen*).

▸ Commit for that table with <F10>.
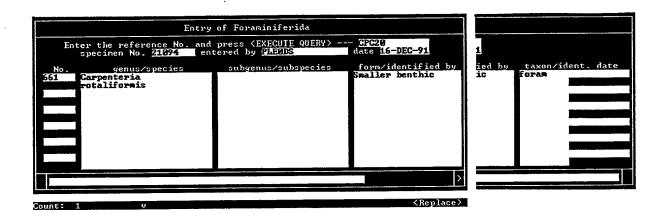
▸ Press <Alt + F10>.

You will then be taken to the next table, where the same procedure can be followed. After the fourth table, you are returned to the initial screen. Follow the instructions to either do another set, or finish the program and return to the Forms Menu.

At this point, it is important that you select Forms Menu Option 5 - which is all you have to do! This is a reporting program (it was not possible to tag it on to the end of the program in Option 4). It advises the Database Owner (currently the Palaeontological Curator), through ccMail, which CPC numbers have been allocated, by whom, and when.

When data on taxonomy and publication become available, they are best added in the individual tables -- remember, these data will be specific to the individual CPC specimens, not to the original samples. For each table, you will have to start by entering the CPC number anew. An alternative is to use *PALENTRY* (Forms Menu, Option 3), display the initial record, then access the two individual Forms from appropriate blocks, as has already been described on p. 11.

FORAMINIFERIDA (FORMS MENU OPTION 6)

This Form is designed for compiling foraminiferal faunal lists, and is entered in Query Mode. It is assumed that the basic sample data have already been entered (e.g. in *INITENTRY*). A scroll-bar at the bottom of the Form indicates that it is wider than can be displayed on the screen -- how to cope with this is explained below. As usual, each field has its own help message.

```
        Entry of Foraminiferida
  Enter the reference No. and press <EXECUTE QUERY> --- CPC28
       specimen No. 21094   entered by PLBGDS    date 16-DEC-91    1
    No.        genus/species      subgenus/subspecies   form/identified by    ied by   taxon/ident. date
  361     Carpenteria                                  Smaller benthic        ic     foram
          rotaliformis

                                                                        >
Count: 1           0                                       <Replace>
```

The sample number is the basis of the query, which must be made before the rest of the Form is accessible.
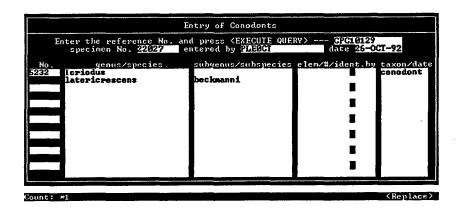
Once a record is displayed (the first two lines of the Form), move the cursor to the first field in the *No.* column -- this is for entering or displaying species numbers.

▸ If you know the *Species Number* for a taxon found in the sample, enter it here.

see: The species name displayed across the screen, together with the form and taxonomic group (see the illustrated example). This can be repeated by moving the cursor to the next *No.* field, and typing the new number.

▸ If you do *not* know the Species Number, move to the next field (*genus*), then --

    ▸ Type the first part of the generic name (DO NOT USE wildcards).

    ▸ Press <F9> [list].

    see: A window overlaying the upper two-thirds of the screen, containing a list of all taxa held in the database whose generic names start with the typed-in character string.

    ▸ To select a taxon, scroll to it, then press either <F2> or <Enter>.

    see: The window disappear, and the taxonomic name displayed in the full Form, together with *form* (default entry 'foram', which if necessary you can edit), *identified by* (default 'Chaproniere', likewise changeable), and *ident. date* (default, changeable, is the login date).

    ▸ If there are more taxa to be added for the same sample, move the cursor to the next *genus* field, and start the listing procedure again.

• When there are no more taxa to be listed for that sample, commit with <F10>.

• If there is another sample to be dealt with, press <Alt + F7>, and start again with a new sample number in *Refno*.

○ When all samples have been committed, exit with <Alt + F10>.

CONODONTS (FORMS MENU OPTION 7)

This Form is designed to do for conodonts what the previous Form did for the Foraminiferida. It differs in that the display fits fully on the screen, and shows not *form* but *conodont element* (name or code) and *population number*. Default entries, editable, are 'conodont' in *taxon* and 'Nicoll, R.S.' in *identified by*.

The same procedures and comments apply as for the preceding option -- in both, just follow the help messages on the bottom line.

```
                        Entry of Conodonts

        Enter the reference No. and press <EXECUTE QUERY> --- CPC10129
              specimen No. 22027   entered by PLEOCT        date 26-OCT-92

   No.       genus/species      subgenus/subspecies   elem/#/ident.by   taxon/date
  5232   Icriodus                beckmanni                              conodont
         latericrescens

  Count: *1                                                              <Replace>
```

A composite Form designed to record treatments used in processing samples for palynomorphs.

A hard copy of records displayed in this Form can be produced using Curatorial Reports Menu Option 5 (Palynological Register .....) -- see pp. 31-32.

```
┌──────────────── DATA ENTRY FOR PALYNOLOGY ────────────────┐
│SPECIMEN: Reg'd No. MFP10009                    │date  16-JUN-93 25140│
│prefix/acronym MFP  number 10009  suffix ▨      │login    CTHUN       │
│field No. Ashmore Reef #1  CBF No. 849                               │
│remarks                                                             │
│                                                                    │
│LOCATION: country/ocean Australia        area                       │
│well Ashmore Reef #1              depth 3066.59   to 3066.72   m     │
│details 10061' - 10061' 5"                                          │
│PREPARATION: date 28-OCT-93 by CTHUN         samp.type    core No. 22│
│sample weight 7.652   residue? Y processes: 1st HCl? Y HF? Y 2nd HCl? Y│
│sieve 20    SG 2   OXY    KOH    VOM    No. of slides 3   K?         │
│description                                                         │
│STORAGE: building AGSO              room 166                        │
│     wallet number              cabinet/drawer                     │
│     other area                             check 16-JUN-93        │
│collector/donor #     ▨                     micropal box #         │
│         remarks                                                   │
│                    Press <EXIT> to quit.                          │
└───────────────────────────────────────────────────────────────────┘
Count: *1                                              <Replace>
```

The first block is a view of the *SPECIMEN* table -- see pp. 8-10, 15-16 for comments on the individual fields. This block gives access to the full Form in the normal way, with **<Alt + F3>**. The only new field is *CBF No.*, which is a cross-reference to Clinton Foster's personal numbering system. Under *prefix/acronym* the default is 'MFP', and appears automatically except in Query Mode. As with all composite Forms, this one can only be queried from within this first block.

The second block is a view of the *LOCATION* table, and gives access to the full Form. Special requirements for some fields are discussed in the context of the *INITENTRY* and *PALENTRY* Forms (pp. 9-10, 13-16). The default entry in the field *country/ocean* is 'Australia'.

The third block deals with various preparation processes, and from it **<Alt + F3>** gives access to a *SAMPLE PREPARATION* Form. This can display up to four sets of data from the *PREPARATION* table, and is designed for entering multiple records (see the discussion of *INITENTRY* and *PALENTRY* on p. 11 for the way in which this system works). The fields are either very straightforward, or (as listed below) very specific --

samp. type records the type of sample being processed --
   OC = outcrop   DRE = dredge   COR = core   SWC = side-wall core   CUT = cuttings
core No. specifies the core number within a well (it is a numeric field).
sample weight is the weight in grams of the sample to be processed.
residue? requires simply **Y**(es) or **N**(o) -- i.e. is there a residue or not?
1st HCl?, *HF?* and *2nd HCl?* record sequential acid treatment, again with **Y** or **N**.
sieve -- specify the sieves used in separation, e.g. as "38&20&10".
SG -- specific gravity of the separating liquid used.
OXY -- Oxidation (a numeric field): records the number of minutes in HNO_3.
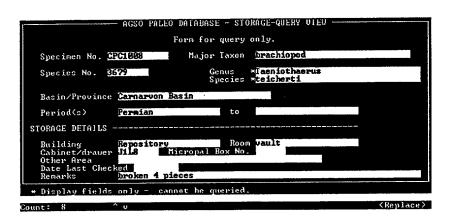*KOH* -- (a numeric field): records the number of minutes in KOH.
VOM -- initials of "volume of organic matter", a number derived according to the following formula:
   $$VOM = 10(\text{weight of float} \div \text{original weight}).$$
K? -- kerogen present or absent? -- requires simply **Y**(es) or **N**(o).

The fourth block is the *STORAGE* Form (see p. 21), plus one special field: *wallet number*, which refers to an old (but still extant) storage system for slides using numbered subdivided envelopes ("wallets") in index cabinets. Access to the *ACQUISITION* Form (see p. 17) is gained from the *collector/donor #* field. Default entries (which can be changed) are 'AGSO' for the *building* field, and '166' for *room*.

FIND LOCATION OF SPECIFIED HOLDINGS (FORMS MENU OPTION 10)

This Form, although displaying data from several tables, works as though it were a single-table Form. It is designed to display information on the location of specimens, selected either on number, or a combination of basic taxonomic, geological and age data (i.e., informal taxonomic name or a specific species number; geological basin or province; period). There are two "display only" fields, *Genus* and *species*. The Form can also be used to find out what is in a specific storage location.

```
━━━━━━━━━━━ AGSO PALEO DATABASE - STORAGE-QUERY VIEW ━━━━━━━━━━
                        Form for query only.
     Specimen No. CPC1068          Major Taxon  brachiopod
     Species No.  3679             Genus   *Taeniothaerus
                                   Species *teicherti
     Basin/Province Carnarvon Basin
     Period(s)     Permian              to
STORAGE DETAILS ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
     Building      Repository       Room vault
     Cabinet/drawer J1L8      Micropal Box No.
     Other Area
     Date Last Checked
     Remarks      broken 4 pieces
  * Display fields only - cannot be queried.
Count:  8            ^ v                          <Replace>
```

The Form is in Query Mode when accessed (for procedures see pp. 44-45), and because of its underlying construction cannot be used for data entry or updating. Moreover, because it acts as though it were displaying only one table, movement is only with either <Enter> or <Ctrl + h>. It is possible to retrieve on any except the "display only" fields, but retrieval except by specimen number can be rather slow. So if at all appropriate put at least part of a specimen or sample number in *Refno* (remember the Wildcard!) as a query condition. Unfortunately, a simple "%" by itself will not help.

REPORTS

Two Menus opened from the Main Menu give access to a variety of Report programs. Of these, the first Menu (Option 3 - *Catalogue Reports*) has to do with the production of catalogues for selected parts of the Commonwealth Palaeontological Collection. A separate short manual is available from the Curator for these programs. As they will only be of use to someone producing a catalogue they will not be dealt with in this more general manual. A list of the Reports to be found under this Menu is given on p. 6. The second Reports Menu (Main Menu Option 4) is for *Curatorial Reports* -- "curatorial" being taken quite broadly. The full list is found on p. 6.

PLEASE NOTE: If you are running a Report program several times in succession for different sets of specimens, it is *imperative* that as each file is generated (under the general name of the Report program, plus the extension *.lis*) it is renamed.
Each new file overwrites the previous file of the same name.

Renaming Report files
- Choose Catalogue Reports Menu Option 6 or Curatorial Reports Menu Option 10. This takes you to your working (usually home) directory, operating under Unix.

see $ (i.e. not the full AViiON prompt)
- To check the contents of your directory, you can enter **ls**.
- To rename a file, e.g. the file *cpcrecs.lis* generated under Option 3, enter **mv cpcrecs.lis** *newfilename* -- where "newfilename" is the new unique name of your choice.
- To return to the Reports Menu, enter **exit**.

CURATORIAL REPORTS MENU OPTION 2: *Ordered list of all recorded specimens.*

This runs completely automatically, and produces a complete list of all CPC numbers held in the database. The ASCII file *palrefno.lis* is written to your AViiON home directory, ready for transfer and printing (after appropriate formatting).

CURATORIAL REPORTS MENU OPTION 3: *Full data records for selected specimens*

This is designed to provide all the data that normally appear on a CPC registration sheet, in an ASCII file *cpcrecs.lis* written to your AViiON home directory. It is intended particularly to provide hard copy (for semi-archival storage) for CPC registrations done directly into the computer without use of registration forms, or for records which have been considerably updated. If you register CPC specimens directly (perhaps using Forms Menu Option 4), it is very important that this Report Program be run, and the resulting properly formatted and printed hard copy be handed to the Palaeontological Curator.

Running the Report program.
When you access this Option, you will be offered three choices:
- select records by user name and entry date
- select records by a range of CPC numbers
- exit

If you choose selection by user name + entry date, you will be asked to enter them both. If you do not know them, exit and move to the Forms Menu, *PALENTRY* option, and retrieve them -- they are the fields *username* and *entrydate* in the box at the top right corner of the Form, and are fields in the *SPECIMEN* table. Then start again!

> *username* is the PALEO login name -- e.g. **jbloggs**
> *entry_date* is the date on which the data in the *SPECIMEN* table were committed, and should take the standard form, *for example*: **20-MAR-93**

If you choose selection by number, you will be asked to enter the lowest and highest CPC number, omitting the "CPC" acronym (since the program is designed specifically for CPC specimens).

In either case, once the second item is entered you are returned to the program menu. You *must* enter "X", as the program only writes the output to the file *cpcrecs.lis* when this is done. Don't forget to rename that file before you run the program again (see above).

Transferring and editing the Report.
The Report file may now be transferred from the AViiON (see p. 39), and formatted for printing within a word-processing package. To aid in this formatting, several character-groups have been inserted in the text, to act as flags for "find" procedures. These, which should enable appropriate macros to work no matter what the word-processing program used, are explained on the first page of the file, as follows:

For editing purposes the flags listed below have been inserted where appropriate
Macros to change the text so flagged must be run in the order of this list
  1 - italics: ital1 = start, ital0 = end; WordPerfect macro: italics
  2 - boldface: bf1 = start, bf0 = end; WordPerfect macro: boldface
  3 - large font size: lgf1 = start, lgf0 = end; WordPerfect macro: large

  As of May 1992, under WordPerfect insert the following printing codes, which will fit the text onto an A4 page
    Format: top margin 2 cm, left margin 1.8 cm, right margin 1.2 cm
    Base Font: Palatino 9 pt

Use this printed report to check for AND CORRECT any errors in data entry.

When all corrections have been made, it is your responsibility promptly to prepare a fresh set of registration sheets, and hand them to the palaeontological curator.

DELETE THESE INSTRUCTIONS AFTER EDITING AND BEFORE PRINTING

Experience has shown that for Palatino 9pt it is not necessary to have a left margin narrower than 2 cm. However, if 10pt must be chosen then the heading will not fit unless the margins are narrow.

Each record is a separate page. Prior to formatting, the upper portion of one such record looks like this:

```
     lgflbflREGISTERED SPECIMEN - COMMONWEALTH PALAEONTOLOGICAL
COLLECTION

CPC 2698bf0lgf0   INDEX NUMBER: 27249
STATUS: Referred specimens
22 specimens                       entered by: Strusz  on 09-aug-94
Appearance/configuration: fragmentary more-or-less fire-damaged
conchs
     Known associated taxa:
General remarks:

lgflbflSYSTEMATICSbf0lgf0
     Major taxonomic group: ammonoid       SPECIES NUMBER: 1167
Phylum Mollusca    Class Cephalopoda
Order Ammonoidea    Suborder Lytoceratina
Superfamily Turrilitacea      Family Baculitidae      Subfamily
Eubaculitinae
lgflitallEubaculites vaginaital0 FORBES, 1846lgf0
```

When properly formatted, this will be changed to --

REGISTERED SPECIMEN - COMMONWEALTH PALAEONTOLOGICAL COLLECTION

CPC 2698 INDEX NUMBER: 27249
STATUS: Referred specimens
22 specimens   entered by: Strusz on 09-aug-94
Appearance/configuration: fragmentary more-or-less fire-damaged conchs
   Known associated taxa:
General remarks:

SYSTEMATICS
   Major taxonomic group: ammonoid   SPECIES NUMBER: 1167
Phylum Mollusca   Class Cephalopoda
Order Ammonoidea   Suborder Lytoceratina
Superfamily Turrilitacea   Family Baculitidae   Subfamily Eubaculitinae
Eubaculites vagina FORBES, 1846

CURATORIAL REPORTS MENU OPTION 4: *Production of specimen labels*

This Report program is designed to produce tray labels for specimens registered in one of the formal collections (CPC, F, etc.). Selection is purely on collection acronym and set of numbers, and a file *labels.lis* is generated in your home directory. As with the previous program, editing labels are inserted, but there is no explanatory page, and the records follow one another without page breaks.

Running the Report program.
     The screen display is simple:

```
SQR:  Structured Query Report Writer  V2.27c
Copyright  <C> 1986-89  SQ Software  All Rights Reserved

Enter the acronym -- e.g. CPC, F  :
Enter the lowest fossil number     :
Enter the highest fossil number    :
```

Enter each item in turn - e.g. "CPC", "539", "545" - and when the last is entered the program will run, and you will be returned to the Curatorial Reports Menu.

The same comments on file renaming and transfer apply as applied to the previous Report (see pp. 28, 39).

Editing the Report.

To fit relevant data on a label which will fit in a standard 5x7 cm tray, more extensive formatting is required than for the previous Report, but the principle is the same.

The *base font* is Helvetica 10pt. The flag pairs for font changes, to be attended to in this order, are:

rj1 - rj0	right-justify the type status of the specimen
ff1 - ff0	put into fine font size (Helvetica 5.8pt under WordPerfect 6)
sf1 - sf0	put into small font size (Helvetica 7.7pt)
lf1 - lf0	put into large font size (Helvetica 11.8)
bf1 - bf0	put in bold face.

Following that, put the text in Newspaper Column format, 3 columns per page, adjusting margins and column separation to give a 60 mm text width, and print. A single label cut from a resulting A4 sheet will then look like this:

CPC 1011   **Paratype**
Taeniothaerus teicherti COLEMAN, 1957
Brachiopoda
COLEMAN, P.J., 31/8/1957, 104, Pl.17, fig. 1.
Carnarvon Basin
Wandagee Formation
Permian, Artinskian
Commonwealth Palaeontological Collection
Australian Geological Survey Organisation

CURATORIAL REPORTS MENU OPTIONS 5 & 6:
Palynological register / Selected data for specified MFP numbers

Designed specifically for palynomorphs, these two Report programs do not require further formatting. The first will provided a record of location, preparation history, and storage location for MFP-registered samples, the second is an abbreviated list of source and remarks on processing, designed for easy loading into an *Excel* spreadsheet. The files generated are respectively *palynrep.lis* and *palrep.lis*, and should be transferred &/or renamed in the usual way (see pp. 27, 39).

In both cases, you will be asked to enter first and last numbers (*refno*), which should include the acronym "MFP". That done, the program runs and you are returned to the Curatorial Reports Menu.

The output from *palynrep.lis* appears thus (single record) --

REGISTRATION: No.: MFP10001   entered by: CTHUN   on: 16-JUN-93

field No.: 56-DR/014 A(4)   CBF No.: 841
remarks:
LOCATION: country/ocean: Australia   area:
well/bore: depth: to: m
details: Dredge samples, Wombat Plateau.
PREPARATION: date: 16-JUN-93   by: CTHUN   core No.:
sample weight: 18.841   residue? N   processes: 1st HCl? Y   HF? Y   2nd HCl?
 Y
sieve: SG: OXY: KOH: VOM: No. of slides: K?
description: BARREN
STORAGE: building: AGSO   room: 166
wallet No.:   cabinet/drawer: check: 16-JUN-93
other area: micropal box #:
collector/donor:
remarks:

The output from *palrep.lis* is one record per line, with commas inserted as spreadsheet cell delimiters; a selection of records appears thus --

MFP10001,56-DR/014 A(4),,,,,,,,BARREN,
MFP10005,Ashmore Reef #1,2833.22,2833.32,,20,10&20,3,,
MFP10018,Ashmore Reef #1,3678.78,3678.94,,26,10,3,BARREN,
MFP10032,DM Brigalow DDH2,552.1,,,,20,3,,
MFP10044,WMC Oil A,,,,,20,,Sample weight is in Litres; Oil dissolved in Dichloromethane,

CONODONT / FORAM LABELS FOR CPC SPECIMENS
(CURATORIAL REPORTS MENU OPTIONS 7, 9)

These two Report programs are designed to produce the formatted text from which slide labels can be made for conodonts and foraminiferans. There are differences in what is retrieved, but the basic structure of the output is identical. Input is the first and last numbers of a block of CPC numbers (the acronym is set at 'CPC' already).

The files produced are *conods.lis* and *forams1.lis*, and they should be handled as are those from the previous report programs (see pp. 28, 39).

Base font is Times Roman 8 pt.
Formatting flags are:

      lf1 - lf 0   large font size (9.6pt)
      bf1 - bf0   boldface

Set up for newspaper-style columns, about 2.5 mm separation, 24 mm text width, 5 columns across an A4 page. The labels for each slide are arranged as a pair, to be placed either side of the specimen well or thin section.

When copied, either copy onto self-adhesive sheets or use some other form of adhesive, guillotine to size, and apply. The formatted pairs of labels under the two programs will appear thus --

```
┌─────────────────────┐        ┌─────────────────────┐
│ Paltodus sp. a      │        │ O p e r c u l i n a │
│ Ct 69               │        │ complanata          │
│ CPC10146            │        │ (DEFRANCE, 1822)    │
│                     │        │ 133-826A-2W-CC      │
│                     │        │ CPC23256            │
│ DRUCE, E.C., 1970D  │        │                     │
│ BMR Journal         │        │                     │
│ Pl. 7, fig. 3       │        │ CHAPRONIERE,        │
│ Lachlan Fold Belt   │        │ G.C.H. & BETZLER,   │
│ Devonian            │        │ C., 1993            │
│                     │        │ BMR Journal         │
│                     │        │ Pl. 1, fig. 1       │
└─────────────────────┘        └─────────────────────┘
```

FORAM LABELS (CURATORIAL REPORTS MENU OPTION 8)

Designed to produce labels for unpublished foraminiferan slides, this differs from Option 8 only in the style of the sample or specimen number (no acronym is specified). This, however, does impose limits on the way in which numbers are entered, because of the way in which the computer "orders" alpha-numeric fields. Remember, the computer first converts letters into numbers, and then orders the numbers so produced. The only safe way is to group number sets so that any alphabetic parts do not change within each set.

The output is a file *forams2.lis*.

USING SQL*PLUS

Complex operations generally cannot be performed with the database in Forms Mode, but must rather be done, either directly or indirectly, using the SQL*Plus language. This is very useful in gathering together data from a number of tables, generating reports, and carrying out some forms of updating. The full gamut will not be discussed here -- look to the manuals on SQL*Plus, or see the somewhat briefer discussion in AGSO Record 1993/81. However, some relatively simple procedures which are most likely to be used are explained below.

Start SQL*Plus

▸ Select Main Menu Option 5.
see: SQL-Prod >

Leave SQL*Plus

▸ Enter **exit**

ESSENTIAL POINTS TO NOTE
--- DO NOT USE <Delete> to correct errors; use <Backspace> or simply go back to the error with the left cursor key and retype (the keyboard is locked in "replace" mode).
--- Use table and field names as shown in Appendix 3 (p. 47), not those heading the various forms, where space sometimes allows the use of less cryptic names, sometimes forces abbreviations.
--- When referring to a table, always combine it with the database name, in this manner:
..... **paleo.identification** ...
--- When typing a command, do not insert the final semi-colon until you have checked for errors, and have made sure you have so phrased the command that it will work only on the particular records you want affected. Be especially careful if using wildcards.
--- A command must end with that semi-colon, and is executed with <Enter>.
--- Before you insert the final semicolon in a command, you can abandon the command with <**Enter, Enter**>.
--- You cannot easily abort a command once it has started, but if you realise that you have run a bad command, immediately enter **rollback;** -- this will undo the command, *provided you have not left SQL*Plus.*
--- Remember, you do not see displayed the results of many commands, unless you enter specific preliminary commands - which may include writing the result to a file.
--- Leave SQL*Plus by entering the command **exit.**

In the examples that are given in this section, the following conventions are used:
tablename = the *formal* database name of the table to be used in executing the command specified (see the comment above).
fieldname = the *formal* database name of a single field in a table.
{command} = an optional command or word to be inserted at that point when required. This is used to indicate alternative command phrases.
[comment] = an explanatory comment, not to be incorporated in an actual command.
nnn = a number (may or may not be decimal).
string = a series of characters &/or numbers to be inserted in the database (or which a query is required to match).

Commands should be entered with spaces only where shown (a space can be more than one character long without affecting a command).

Avoid long command lines, as "wrapping" them can be tricky. It is better to break a command up into short segments, placed on separate lines (see below). Make sure each line is correct before moving on to the next with <Enter>. Each new line will commence with a line number, which can be used to modify previous commands - consult the SQL*Plus manual.

A semicolon should not be used except at the end of the complete command, unless within a character string defined by single quotation marks.

If a character string necessarily includes an apostrophe, that MUST be typed as two successive single quotation marks ("), *NOT one double quotation mark (")*, otherwise it will be taken as the end of the string, and you will end up with an error message.

For example, a locality description such as "Beside entry gate to Smith's home paddock" would be typed as "Beside entry gate to Smith"s home paddock".

UPDATING EXISTING RECORDS

It is possible to update several records at once, but only in one table at a time. However, the criteria for selecting which records are to be updated can involve other tables.

When updating, you see only a statement, *after it has been done*, of how many records were affected. If you are uncertain which records will be affected by your command, try it first as a "select", after arranging to have the result written to a file (see below).

If you are performing a long series of updates, it is wise to commit what has already been done every now and again, to guard against system failures etc.

▸   enter **commit;**

All transactions will be committed automatically when you leave SQL*Plus -- that should suffice for short sessions.

Two examples of updating commands are given below, the second specific to CPC (or similarly constructed) numbers.

❶ *Update, selecting records which match field(s) in the same table:*

Update paleo.*tablename*
2   set *fieldname* **= 'string' {,** *fieldname* **= 'string'} {,***fieldname* **[numerical field] =** *nnn***}**
**   [a comma must separate successive clauses]**
3   where *fieldname* **= {'string'}{***nnn***} {or} {and} {***fieldname* **= {'string'}{***nnn***};**

This will put into the specified fields the words or numbers specified, for all records with field contents matching precisely those specified by the "where" clause.

Note the use of single quotation marks to define *text* to be inserted or matched, *but not numbers*.

Note that all sets of brackets must close -- so a complex command may finish with several ")))"!

Because the command is long, it has been divided into sections, each on a single line (finish each line with <Enter>); the line numbers are added automatically, and do not form part of the command itself.

If you do not want to replace any existing data, then as part of the "where" clause include a selection criterion that restricts selection to those records where the specified field is empty, in the form:
         {and *fieldname* **is null}**

If you are uncertain, it would be wise to check that the records to be retrieved are just those you want by querying as you intend, but substituting "select" for "update". If only the desired records are retrieved, then proceed with the update; otherwise rethink the selection criteria.

It should be clear from this that SQL*Plus cannot be used simply to add text to a field which already contains some. That has to be done either under Forms Mode or, if the existing text is common to several records, by *replacing* the former text with the *full [old + new] text.*

Wildcards:
As in Forms Mode, wildcards can be used in SQL*Plus (see p. 45). However, their use does make the wording of that part of the command string slightly different.´ If, in your selection criteria, you wish to introduce wildcards the appropriate wording is one of the following:

{fieldname like {*'string%'*}{*'%string'*}{string%string}{*%*string*%*}} [for fields in which the data contain the specified string(s) in the positions shown amongst otherwise unspecified text -- e.g. **genus like 'Reticul%'** or **Refno like 'CPC%22'**].

{fieldname like '*string_string'*} [where a single character within a string may vary - more than one underline symbol may be used, one for each variable character. For example: **Refno like 'CPC22_'** or **Refno like 'CPC_22_1'**. Remember that the remaining characters in the specified strings will be matched exactly, including by case].

The two wildcards can be mixed in the one string - e.g. **Refno like 'CPC22_%'**. Note the use of the word "like" to replace "=" when wildcards are used.

❷ *Update, selecting by reference number:*
Because of the way in which the Oracle system orders the contents of fields, the selection of a series of catalogue numbers, (CPC ..., F ..., or similar) for updating is a bit complex, involving selecting the components of the number to avoid changing data where it should not be changed. The full command for one or a series of specimen numbers in the CPC, F, or similar collections thus takes the form:

> Update paleo.*tablename* set *fieldname* = '*string*' [and the other alternatives as in the previous example]
> 2   **where refno in**
> 3   **(select acronym || to_char(num) || suffix from paleo.specimen**
> 4   **where num {= nnn} {between nnn and nnn} and acronym = {'CPC'} {'F'} {'E'}**
>   **{and suffix = 'string'}); [use the last phrase only where essential]**

Note carefully where the round brackets start and finish the selection sub-clause. Note also that the first and last specimen numbers in a series are specified. It is possible to specify several numbers &/or series of numbers by joining the phrases of the "where" clause with the word "or" - e.g.:

.... where num = 2786 or num = 2880 or num between 2901 and 2925 ....

For "unregistered" specimens and samples where there is no acronym this command does not apply. Selecting on a range of numbers will therefore be very difficult, as ORACLE and similar database systems order alphanumeric fields by first converting the letters to numbers (following

database systems order alphanumeric fields by first converting the letters to numbers (following an agreed convention). The results can be surprising! For such specimens, choose another selection criterion, or update under Forms Mode.

Long commands:

If you put together a very long command it may exceed the allowed line length. If that happens, the command will be split in a relatively illogical way, and without special treatment will not work. To indicate that a very long command is continued on a second line, without break, insert a dash (-) at the end of the first line, and then start the second line by pressing <Enter>. As already noted, it is better not to make commands so long, but to divide them up into separate logical clauses, each on a separate line.

Error messages and command correction:

If the system doesn't like something about the way you phrased your command, it will tell you, and will not execute the command. The command will be displayed, with an asterisk below the place where the error was found. If you divided your command into clauses on separate lines, the offending line will be displayed with appropriately placed asterisk, as well as the line number and error type. If you have made several errors, Oracle (because it examines a command backwards) will only display the one closest to the executive semi-colon, so it may take several goes to get the command right.

If your command was on only one line, it can be edited and re-run very simply:
- ▸ <Ctrl + A> will display the command;
- ▸ move back through it with the <←> key to the error;
- ▸ type over what is already there. It is better to avoid <Backspace> in the middle of a command - extra spaces can be left, as they are ignored.
- ▸ Execute the corrected command with <Enter>

If your command covered several numbered lines, note carefully the line number(s) where the error(s) occurred. Then:
- ▸ Enter **list** *n* -- where "n" is the number of the line to be edited.
- ▸ Enter **c** /*wrong part of command*/*correct command wording*/ -- in other words, following the command ("c" stands for "change"), specify the wrong text, and the wording to replace it. Note carefully the slashes separating the two sets of text *without gaps*!

When all corrections have been made, rerun the command:
- ▸ enter **run**

DATABASE STATISTICS

It will sometimes be useful to know how many records there are for a particular field.

- ▸ Enter **select count(*fieldname*) from paleo.***tablename***;** -- selection conditions can be added before the semi-colon if desired (i.e., "where ....").

SELECTING RECORDS

Just as command strings are used to update records, so also they can be used to query the database. The conventions are the same. A typical simple command string would take the following form:

select *fieldname* {, *fieldname*} from paleo.*tablename* where [add selection criteria just as in updating];

Queries become complex only where several tables are involved, as the way in which data from those tables are "joined" must be specified. Consult the SQL*Plus manuals.

If you just want to look at the result of your query on screen the above will suffice; the data will scroll past, and the scrolling can be stopped and resumed with <Scroll Lock>.

GENERATING REPORTS

If you want a printed record, then in the way of all computer systems you must first tell the system what it is to do. Specifically, it must be instructed to save the result of a retrieval to a named file for subsequent handling.

Before entering and executing each query --
► Enter **spool** *filename* -- quoting the name of the file you wish to hold the result of the query.

When the query has been run --
► Enter **spool off** -- the file *filename*.lst will be generated in your home directory.

Repeat this procedure for each query, *using a different filename each time*. If you want to send the report to the Line Printer on the ground floor, the alternative last command is **spool out**. Otherwise the file can be transferred to your PC as an ASCII file (see p. 39), for examination at your convenience.

If you want to check that the files have been generated, or what size they are, you can use Unix commands, but you must tell SQL*Plus that you are referring to your working (normally home) directory. Thus:
► Enter **host ls** to obtain an abbreviated directory listing.
► Enter **host ls -l** to obtain an extended listing.
► Enter **host pg** *filename* to display the file *filename* a screen at a time (scroll through it with <Page Down>, quit with q).

TRANSFERRING FILES

To transfer any files you have generated in your AViiON home directory, either by running Report programs or from SQL*Plus, you must first quit both PALEO and the AViiON, then log in again either through the LAN Workplace window or from DOS.

Windows ---

- ► Double-click the "Rapid Filer" icon.
- see: "Open a Remote System" dialogue box.
- ► Click on "Remote Host Name" box, type **av**
- ► Click on the "User Name" box, type your *AViiON username*
- ► Click on the "Password" box, type your *AViiON password*
- ► press <Enter> or click on "Open".
- see: a split window, with the initial directory (*i*) above, your AViiON home directory below.
- ► Click on the upper window, then bring down the File menu.
- ► Select "change directory", then follow the menu to set up the directory to which you want to transfer any files; execute by selecting "Change".
- ► Highlight the file to be copied.
- ► Click on the Copy button.
- ► Repeat if desired.
- ► If desired, while connected you can clean up your AViiON directory - select files, then select appropriate buttons (e.g. Rename, Delete).
- ► Exit by selecting "exit" from the "File" menu.

MS-DOS ---

- ► go to the network prompt (e.g. M:>) and enter **ftp-av**.
- ► When asked for the name of the host, enter **av**.
- ► Enter your AViiON username and password when asked.
- see: your home directory prompt, i.e. av/home3/.....
- ► Enter **ls** to see a listing of the files therein.
- ► Enter **get** *filename.ext pathname* -- where "*filename.ext*" is the full name of the file you want to transfer, and "*pathname*" is the *full* pathname -- drive, directories, and file name -- for the file when it is transferred. The new file name does not have to be the same as the AViiON one.
- see: A statement on how many bytes were transferred, at what speed, and how long it took.
- ► Repeat as necessary.

When you have finished transferring files, you can if you wish clean up your home directory. For each file to be deleted:
- ► enter **rm** *filename.ext*

When you have finished, leave the AViiON with the usual Unix command **exit**.

APPENDIX 1 --- PASSWORDS

When you first log in to most networked systems, you will be confronted with the need to change from a specific initial password to one that is unique to you. Each system has a distinct way of achieving this, and each system administrator has his or her own carefully guarded initial password. Some systems also require that passwords be changed periodically, but then provide prompts on how to do this, so need not concern you unduly. In this Appendix will be explained how to change your AViiON and Oracle passwords (for the *initial* password, ask the appropriate system administrator).

AViiON:

- ►   Log in using your existing password (or the system's initial password).
- see: av/home3/*username* $ -- i.e. your home directory prompt;
- ►   enter **passwd**
- ►   when asked, enter the password you used to log in;
- ►   when asked, enter your chosen new password, twice.

You will then be returned to your home directory prompt.

ORACLE:

- ►   Log in to PALEO using your existing/initial password.
- see: Main menu.
- ►   Select Option 5 (*use SQL*Plus*).
- ►   Carefully enter the following command line, where the appropriate words are substituted for "your username" and "new password". DO NOT type the semi-colon or press <Enter> until you are sure you have the command right -- go to errors with the cursor keys (and <Backspace> if necessary), then overtype the text with the correct words; DO NOT USE <Delete>.

     grant connect to *your username* **identified by** *new password*;

- see: Grant succeeded
- ►   Enter **exit**
- see: Main menu.

If, having established a password, it happens that you forget it, ask the system administrator (AViiON or Oracle as appropriate) for help. The administrator will reset your password to the initial password, and you start again. *It pays to have a password which, while not easy for someone else to guess, is nevertheless one you can easily remember! Random character groups may be difficult to guess, but are just as difficult to remember.*

APPENDIX 2 --- ORACLE COMMANDS, PROCEDURES & KEYSTROKES

In a relational database, the data are held in a number of *tables*, each item being stored in a *cell* or *field* at the intersection of a *row* and a *column*. Tables are linked by common or *key* fields. A *sample or specimen record* comprises the data held in one or several tables.

There are two ways to work with the data. One is by using Oracle's command language, called SQL*Plus, the other is through a system of data entry and display Forms, each of which displays selected parts of the database, and through which the user can move using specific keystrokes. The former is powerful, can refer to any combination of tables, and can retrieve multiple records which can be stored in an ASCII file for later manipulation or printing. Its disadvantage is that the language is complex, precise, and must be used with care. The latter is simpler to use but less flexible (because all the commands for using the actual database must be built in), and cannot store retrieved records. Forms work by setting up one or more *views* of the database, which may incorporate fields from one or several linked tables; each table forms a *block*. A Form can only display one specimen or sample record at a time. Nevertheless, the Forms system (or "Forms Mode") is the normal means of access to the database for data entry, updating and correction, and for one-off queries.

Details of all available ORACLE Forms functions can be found in Lenz et al. 1993 (AGSO Record 1993/81). A reference list of those normally used is given below, cross-referenced where appropriate to the following discussion of the various procedures and keystrokes, set out in the order in which they are likely to be met with. A PC keyboard template for the pc-vt emulation (that favoured under LAN WorkPlace) is available from the Database Owner.

Remember at all times that you are working directly with the database -- be sure of your keystrokes (especially special keys). Errors must be detected to be corrected, and the database is only as accurate as the data it holds, so check for and correct all errors!

CONTENTS:

KEYBOARD MAP: pc-vt emulation

-- Alphabetic keys working as part of commands are *case-insensitive*.
-- The following list omits those commands involved only in forms and menu designing.

<F1>	**show keys** - i.e. list available key definitions and functions.
<F2>	**select.**
<F3>	**duplicate field.**
<F4>	**duplicate record.**
<F6>	**insert record.**
<F7>	**enter query.**
<F8>	**execute query.**
<F9>	**list.**
<F10>	**commit transaction;** also **accept.**
<Alt + F1>	**display error** - displays the program command which caused the error, with some indication of just what the error was.
<Alt + F2>	**count query hits** - i.e. how many records will be retrieved by a query you are about to execute. This gives you the chance to decide whether to add to the selection criteria so as to restrict the number retrieved. Run *before* pressing the [**execute query**] key.
<Alt + F3>	**next primary key.**
<Alt + F4>	**clear record** - i.e. remove the displayed data for that record only, in the Form in use. The *display* is cleared, but the data are not destroyed.
<Alt + F6>	**delete record** - the record will be destroyed once the transaction is committed.
<Alt + F7>	**clear form** and **rollback.** -- the former option clears all displayed data from a form (not just one record); -- the second option, *if used before logging out*, will reverse an unwanted committal - even the deletion of a record.
<Alt + F8>	**print** - necessary connections, etc., have to be made first, so this is not very useful.
<Alt + F9>	**refresh** - if for some reason while in PALEO your screen gets covered with garbage, this will redisplay a pristine screen or form.
<Alt + F10>	**exit** - you will be queried if there are any uncommitted transactions.
<Tab>	cursor to **next field.**
<Enter>	cursor to **next field.**
<Backspace>	cursor to **previous field** - it's less confusing to use <Ctrl + H>!
<-> & <->>	work as always - cursor left and right.
<↓> & <↑>	scroll forwards and backwards through multiple records, and also through menu options.
<Home>	go to **next block.**
<Insert>	insert/replace toggle (i.e. change modes).
<End>	go to **previous block.**
<Page Up>	go to the **previous record** - it's less confusing to use the cursor key, because <Page Up> always takes the cursor to the beginning of the first field in the Form.
<Page Down>	go to the **next record** - again, and for the same reason, it is simpler to use the cursor key.
<Ctrl + A>	**clear block** - in a composite Form, this is quite different from <Alt + F4> and <Alt + F7>.
<Ctrl + B>	**block menu** - displays a list of the blocks to which you can gain direct access, choosing with the cursor keys and then either <F2> or <Enter>.
<Ctrl + F>	**clear field.**
<Ctrl + H>	go to the **previous field.**
<Esc + E>	**edit** - useful when fields to be edited are long &/or truncated, because the field is displayed in an editing window, within which *all* cursor arrow keys work as expected.
<Esc + G>	cursor **move to end of field** - i.e. to just behind the last character in the field.
<Esc + H>	**HELP!** Used once, gives a brief help message at the bottom of the screen; used a second time, displays full details for the field containing the cursor.
<Esc + I>	cursor **move to beginning of field.**
<Esc + T>	**clear text to end of line,** i.e. from the cursor to the end of the field.

KEYSTROKES & PROCEDURES

Exit   <Alt + F10>

One of the most important keystrokes -- the one which gets you out of the database! In fact this key combination has the more basic meaning [cancel].

> If you think of Oracle Forms as running a series of nested programs - starting with the menu program, then the Forms program, followed by the Query program - then it makes sense that each <Alt + F10> cancels the program running at that time. If in query mode, you will be left in the form; a second "cancel" will take you back to the menu program; the next "cancel" stops that program, and returns you to the system prompt.

If you get into trouble while in Forms Mode, you can [cancel] - <Alt + F10>. You will usually be asked whether you want to commit any changes you have made -- the safe answer is "No". You will exit to the menu, and must start again, but at least you have not incorrectly modified the database.

Cursor control

The normal keys for cursor movement are:

Move to right in field:	<→>	Move to left in field:	<←>
Go to end of field:	<Esc + g>	Go to start of field:	<Esc + i>
Move to [next field]:	<Enter>	Move to [previous field]:	<Ctrl + h>
Move to [next block]:	<Home>	Move to [previous block]:	<End>

In the Forms *INITENTRY* and *PALENTRY*, <Enter> is programmed to allow the cursor to move forward through the whole view, but the reverse has not been implemented -- <Ctrl + h> will only work within the one block.

Moving between records

Either as a result of retrieving several records with a Query, or following entry of successive records without closing a Form, it is possible to examine individual records:

    Move forward 1 record: <↓>   Move back 1 record: <↑>

Moving between Forms

From appropriate places in several Forms, it is possible to move to a linked Form, which may be a full version of a table abbreviated in the first Form, or a lookup table. From a specific field or block in the initial Form, <Alt + F3> [next primary key] will place the cursor in a designated field within the linked form.

With appropriate programming, a linked Form will query the database so as to display data from the initial form. From this point, a whole series of records (for that table) can be entered using the "Duplication" facility (see p. 47). Return to the initial Form with <Alt + F10>.

When you enter a lookup table you are immediately placed in *Query Mode* (see below). This fact will be advised in the message line at the bottom of the screen. It is then possible to establish appropriate data, such as the Species Number for a taxon. If the data are already in the database, they will be displayed and Query Mode cancelled. If not, and you have to establish a new entry, first cancel Query Mode with <Alt + F10>, then enter the data, and commit it with <F10>. You can then take data (such as the computer-generated Species Number) back to the initial Form with <Alt + F3> [next primary key]. Alternatively, return without the data with <Alt + F10>. Extensive help messages are provided where there is room on the screen.

Text control

Changing text within a field can be by insertion, replacement, or deletion.

<Esc + t> [clear to end] will clear all of a field *at and following* the cursor position; unfortunately it is my experience that this does not work properly every time, sometimes just inserting a "t" where the cursor is, so watch what you are doing.

<Delete> will delete the character *before* the cursor (DO NOT USE <Backspace>, which has a different function: go to previous field).

<Insert> works in the usual way, as a toggle between "insert" and·"replace" characters. In Oracle, the default setting is "replace", not the normal PC setting "insert".

<Alt + F6> [delete record] will delete a displayed record, but not undisplayed tables. This means that if you try to delete a record in a table with a key field, such as *Specimen*, you are likely to get a message saying that you must delete the record in other linked tables first. In that case, note down what you are trying to delete, exit the Form with <Alt + F10>, answer "No" when asked if you want to commit the changes (see the next item), then search and delete, using an appropriate Forms option (e.g. *PALENTRY* -- see pp. 8-12, 14-16).

Truncated displays - examining in full and editing

Where the contents of a field cannot be fully displayed because of limited space, it is possible to display the full field in a separate editing window, with the advantage that the cursor up and down arrows work, allowing quick movement through lengthy text.

▸ Press <Esc + e>.
see: Editing window. When finished --
▸ Press <F10>.

Transaction committal

Please note that all "transactions" - i.e. all new entries *or changes to existing entries* - must be actively committed.
▸ press <F10>.
This can often be done for several successive records at a time. In complex Forms, however, one should commit data for a single record before trying to move on to the next one, otherwise it can be difficult to track what caused any error messages.

If you try to leave a Form without committing any changes, you will first be asked whether or not you wish to commit. This will happen even if you have changed your mind, and have reinstated previous text! Of course, if you just want to experiment, it can be a good way to do that and yet avoid affecting the database.

Data updating

"Updating" means both correcting errors made during data entry, and adding to the information already entered. The unifying assumption is that you want to change an existing record, and the basic system is quite straightforward.

Procedure:
▸ Display a record to be updated using *Query Mode* (see next item)
▸ go to the field or fields to be changed (see *Cursor control*, above)
▸ make the appropriate changes to each field (see *Text control*, above)
▸ commit with <F10>.

Query Mode

For retrieval and display of existing records, the database must be given some information on which to select the wanted records, and must be then told to go and find them. To this end,

the "Query" program is run. The program stops *only when it retrieves one or more records, or is cancelled.*

       Procedure: Within the table to be queried:

▸   press **<F7> [enter query]**

▸   move the cursor to the field in which you wish to type the data on which the computer will make its selection

▸   type in the data, using wildcards (see below) if appropriate

▸   repeat for other fields if appropriate

▸   press **<F8> [execute query].**

       If no records are retrieved the system stays in Query Mode, and you will be asked to Re-enter. Either try again with a modified query, or press **<Alt + F10> [cancel]** -- do not try to enter a new record until that is done, or you will receive a message "Function not available" when you try to commit the record, and you will have to start again.

       In multi-block Forms, there are often restrictions on what information can be retrieved in various parts of the Form. This has been discussed in the context of those Forms.

Wildcards in Queries

       When a query is executed the system, unless told otherwise, looks for a precise match for the *total* contents of each field in which you have typed text. Queries are therefore case-sensitive (remember that fact when you are entering new data!), and if the field contains additional text *it will not be retrieved.*

       To avoid this problem, to save time typing a long string of text to be found, and in many cases to limit the number of records retrieved to a manageable number, two specific "wildcards" can be used, either separately or in combination:

"_"   -- the *underline* key on the keyboard -- will retrieve records which have *any* character (or digit) *in that specific position.* It can be used in multiple, but remember, if there is nothing in a particular position (other than a space between two words) the record will not be retrieved.

"%"   -- the *percent* key on the keyboard -- is more general, *standing for any combination of letters or digits.* It tells the database that it wants any record with a specified string of text *within* the field, *no matter what else is there.* This wildcard can be anywhere relative to the specified string, including separating strings, and more than one can be used within a field. It can be used without a string, as a way of retrieving *all* records with data in a particular field; *except in this case*, it will also retrieve records with *no* text where the % is placed. Thus:

       % in a field will retrieve all records with data in that field.

       %text string will retrieve only records in which the typed text is at the end of the field. *Note that putting a wildcard at the start makes retrieval noticeably slower!*

       text string% will retrieve only records in which the typed text starts the field.

       text string 1%text string 2% will retrieve records starting with *text string 1* and subsequently containing *text string 2.*

       %text string% will retrieve all records containing the typed text, and so is the more reliable form of query when you aren't sure how data have been entered, *except* that the typed text will still be sought as an exact match, case and all. *Again, the initial % makes retrieval slower.*

Examples: *1)*   *%Permian* will retrieve "Early Permian", but not "Permian, Early"
                     %Perm% will retrieve both.

          2)   *CPC12__%* (two underlined spaces) in the *Refno* field will retrieve all records of CPC specimens in the twelve hundreds, plus all those in the twelve thousands, and so on. More usefully it will retrieve specimen numbers which include a suffix, such as *CPC 1201a-c*, which the query for *CPC12__* would not.

Multiple records retrieved by Query

When a query retrieves more than one record, this is indicated by the insertion in the message line at the screen bottom of a down-arrow or "v".

Scroll forward through the records with < ↓ > or <**Page Down**> [**next record**].

Scroll backward through the records with < ↑ > or <**Page Up**> [**previous record**].

While you are in the midst of the stack of records, the message line will display the two symbols "^ v"; when you have reached the last record only "^" is displayed. If you persist, the form is cleared until you scroll back. When you scroll back to the beginning the display reverts to "v". If you try to keep going, you will here a 'beep', and a message will remind you that you are at the first record.

In multi-block Forms, indication of multiple records is specific to where the cursor rests: If it is in that part of the Form which queries for complete records, the arrows apply to complete records. If it is in a part of the Form which allows for multiple data attached to the one record (e.g. taxonomic lists, publications), the arrows apply to that block *within the displayed single record.* Anywhere else in the Form, no arrows are displayed.

Record duplication

It will often be the case that there will be data common to many records. Fortunately these common data usually do not have to be retyped for each sample or specimen, since there is a straight-forward procedure in Forms Mode for displaying a "duplicate" of the previous record containing that information, editing the duplicate for any differences, and entering it as the new record.

In this context, it is worth remembering that when a series of records is being entered in a Form, the data in those records already entered is accessible by scrolling at any time *until a query is made.*

      Procedure:

▸   Display the record holding the data to be repeated by querying or scrolling if it is not the record you have just entered.

▸   Check for and correct any errors.

       ▸   If any changes are made, commit with <**F10**>.

▸   Press <**F6, F4**>   [**create record, duplicate record**].

▸   Edit the displayed record (changes or additions) to align it with the proposed new one.

▸   Press <**F10**> [**commit**].

APPENDIX 3: List of PALEO tables & fields

SPECIES
- *speciesno
- phylum
- class
- subclass
- superorder
- ordername
- suborder
- superfamily
- family
- subfamily
- othercategory
- •genus
- subgenus
- •species
- subspecies
- speciesauth
- conodontel
- remarks

IDENTIFICATION
- •*refno
- *speciesno*
- identdate
- identby
- taxon
- *abundpct*
- abund
- *populationno*
- coiling

SPECIMEN
- •*refno
- acronym
- *num*
- suffix
- •specimenno
- •username
- •entry_date
- fieldno
- type_status
- *no_specimens*
- taxa_studied
- configuration
- fieldrefno
- *colldnrno*
- oldrefno
- *cbfno*
- ecology
- maturity
- *tai1*
- *tai2*
- *cai1*
- *cai2*
- radiom
- remarks

AGE
- •*refno
- era
- period1
- period2
- epoch1
- epoch2
- series1
- series2
- stage1
- stage2
- substage1
- substage2
- zone
- datum
- letter_stage
- remarks

ECOLOGY
- •*refno
- *tpct*
- *mpct*
- *rpct*
- *ppct*
- *bpct*
- *no_individuals*
- *no_species*
- *livesp*
- *deadsp*
- *salinity*
- fraction
- remarks

FIELDNOTES
- •*fieldrefno
- *year*
- reference
- map_ref
- *colldnrno*

FORMATION
- •*refno
- basin
- supergroup
- groupname
- subgroup
- formation
- member
- beds
- lithology
- remarks

PUBLICATION
- •*pubno*
- authors
- year
- title
- source

PUBLISHEDIN
- •*refno
- •*pubno*
- illustration
- pageno

ACQUISITION
- •*colldnrno*
- collector
- collyear
- donor
- accnyear

PREPARATION
- •*refno
- •prepdate
- •prepby
- coreno
- *weight*
- residue
- hcl1
- hf
- hcl2
- *sg*
- *oxy*
- *koh*
- sieve
- *vom*
- *slides*
- code
- description
- samptype

LOCATION
- •*refno
- country_ocean
- area
- altitude
- *depth*
- well_bore
- *dlat*
- ns
- *dlong*
- ew
- utmzone
- *gridref*
- oldgridref
- details
- *maprefno*
- *lowdepth*

STORE
- •*refno
- *colldnrno*
- building
- room
- cabinet_drawer
- area
- last_checked
- remarks
- *micropal_box*
- walletno

MAP
- •*maprefno*
- •name
- •scale
- mapno
- remarks

fieldname --- numeric field
- • --- NOT NULL field
- * --- primary key field

continuous lines show links between tables; arrow-head indicates a one-to-many relationship (i.e. one record in one table links to many records in another)

PALTABL2.WPD