SMALL COMPUTERS FOR MILL RECORD SYSTEMS

A A Bryan

The purpose of a computer in a mill record system is to assist in the production of documentation to support field studies of mills by the classification of sites and the records prepared from them.

So far the following dacumentation has been prepared:

1) County Alphabetic Indices for wind- & watermills, covering England, Wales, Scotland and the Channel Islands.

2) Numeric Indices fo 100 km map squares, covering some parts of England and Wales.

3) Database record systems for wind- & watermills to sieve comparitive information for specific examples of mills where deatiled data is available.

Advantages

It avoids the need to fill the house with paper.
Information files can be readily accessed, edited, and printed.
Special listings can be created by sorting files.
Files can be searched for specific information.
Mill data can be cross checked for accuracy.
Files can be portable, subject to system compatibility.

Disadvantages

Cost.
Complexity; the is a need to know how to operate the machine.
Permanent long term records cannot be kept as magnetic recordings. Storage as a print-out of mature files is the only permanent easily readable method.
Out of date files are not retained in the system (as now operated). As new material is added to files, existing information is overwritten.
Backup copies of disc-stored files must be kept against irreparable disc failure. This doubles the cost of storing the large quantities of information retaind in the computerised filing system.

Storage Systems

At present, two large-capacity storage systems are available; flexible discs, and cassette tape. Flexible discs offer fast access, high capacity, and and are convenient to use, but are relatively expensive. Cassette tape offers high capacity at low cost, but is inconvenient to use , and access is slow.

At the present time some 4 000 entries of the Alphabetic County Index of watermills in England are stored on one $5\frac{1}{4}$" flexible ("floppy") disc, with room to spare. The entries are held in separate county files.

Database

This is a system of constant format records which can be arranged to file data on specific mill sites. The mill information can be gathered from fieldwork, etc entered into the data fields of the record form, filed into the storage system and printed as required. The data retained in the records can be individually edited as desired, by the record holder. Individual records can be readily accessed. The file system can be

searched for examples of mills with certain features (the data fields to be searched can readily be altered).

This is a useful type of program for aiding the study of mills which are fairly completeand/or where details are known. The database program being used is not portable between different computers and will only run on the host or a very similar machine.

Future

The aims are to:

Index as many mills of all kinds as possible.

Analyse the results to produce definitive lists of contemporary mill sites according to condition and location.

Enter details of as many mills as possible into a database type record system so that constructional features can be analysed.

Use the above results to guide fieldwork so that important mills are not overlooked and journeys not wasted.

Develop the index further to include references to the existance of a variety of different types of record and their holders.

Above all, stimulate the study of mills in detail and encourage the keeping of organised records.

The following examples of index lists database froms, etc, were printed on a dot-matrix printer to fit an A4 page. They are printed here at a reduction of 0·7.

Example of a Disc File Directory

```
A: STAT     COM : PIP      COM : GEMPEN   COM : ALPHA    HW1
A: ALPHA    AV1 : ALPHA    SY1 : ALPHA    CM1 : ALPHA    NT1
A: ALPHA    CV1 : ALPHA    CO1 : ALPHA    CU1 : ALPHA    DR1
A: ALPHA    LE1 : ALPHA    DO1 : ALPHA    DU1 : ALPHA    ES1
A: ALPHA    EX1 : ALPHA    GL1 : ALPHA    LO1 : ALPHA    GM1
A: ALPHA    HA1 : ALPHA    CH1 : ALPHA    HT1 : ALPHA    HU1
A: ALPHA    IW1 : ALPHA    KE1 : ALPHA    LA1 : ALPHA    LC1
A: ALPHA    NF1 : ALPHA    NH1 : ALPHA    MS1 : ALPHA    BE1
A: ALPHA    NU1 : ALPHA    NY1 : ALPHA    BU1 : ALPHA    OX1
A: ALPHA    ST1 : ALPHA    DV1 : ALPHA    BAK : ALPHA    SH1
A: ALPHA    SF1 : ALPHA    SR1 : ALPHA    TW1 : ALPHA    WA1
A: ALPHA    WM1 : ALPHA    WS1 : ALPHA    WY1 : ALPHA    WT1
A: ALPHA    SO1 : COUNTY   NUM : COUNTY   IND : ALPHA    BK1
A: $$$      PEN
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EXAMPLE OF A COUNTY ALPHABETIC LISTING.

WATERMILL INDEX.

COUNTY ALPHABETIC LISTING.

BEDFORDSHIRE.

PLACE NAME	.MILL NAME	. No.NAT-GRID.CONDITION. DATE. RECORDS
Ampthill	.Doolittle	.177.TL027465.Empty . -73.KM.PD
Ampthill	.Old Corn	.176.TL036364.Traces . -67.KM
Apsley Guise	.	. .SP927363.House? . -73.PD
Astwick	.	.189.TL217385.Incompl. .09-81.JS
Barton	.Barton Manor	.196.TL087312.Traces . -67.KM
Barton-le-Clay	.	.199.TL076312.Complete . -81.KM.PD.JS
Bedford	.Duck	.153.TL054494.Traces . -65.
Bedford	.Priory,Newnham	.191.TL066494.Traces . -67.KM.PD
Biggleswade	.Holme	.184.TL185430.Wks.Turb .09-81.KM.JS.PD
Biggleswade	.Franklin's	.188.TL187444.Empty . -67.KM.PD
Bromham	.	.152.TL011507.Workable .09-81.JS.PD
Bromham	.	.179.TL002510.Traces . -67.KM
Broom	.Stanford	.185.TL171409.Traces . -67.KM
Blunham	.	.183.TL157518.Derelict . -67.KM
Blunham	.South	.203.TL154504.Derelict .09-81.KM.JS
Campton	.	.193.TL131378.Derelict . -73.KM.PD
Cardington	.Mill Farm	. .TL075485.Traces .09-81.JS
Cardington	.	.172.TL079489.Traces .09-81.JS
Clophill	.	.151.TL085378.Disused .09-81.JS.AB
East Hyde	.	.205.TL133170.Working .09-81.JS
East Hyde	.New	.206.TL122181.Traces . -67.KM
Eaton Bray	.Bellows	. .SP981196.House .09-81.JS
Eaton Bray	.Edlesborough	. .SP983191.Derelict . -72.PD
Eaton Socon	.Duloe	. .TL172603.House . -67.KM
Flitwick	.	.200.TL042347.Working .09-81.JS
Flitwick	.Greenfield	.198.TL054354.Traces . -67.KM
Great Barford	.Old	.175.TL128510.Traces . -67.KM
Harlington	.	.195.TL055313.Gutted . -67.KM
Harrold	.	. .SP951566.Traces .09-81.JS
Heath and Reach	.Grange	. .SP910273.Converted.09-81.JS.PD
Holcot	.	. .SP942383.House .09-81.JS
Husborne Crawley	.	. .SP964361.Traces . -73.PD
Kempston	.	.155.TL023476.Traces .09-81.JS
Lansford	.	.190.TL183413.Modern .09-81.KM.JS.PD
Leighton Buzzard	.	. .SP918256.Gone . -73.PD
Maulden	.	.178.TL073373.Empty . -73.KM.PD
Millbrook	.	.202.TL012386.Traces . -67.KM
Millbrook	.	. .TL010400.Traces . - .PD
Milton Ernest	.	.204.TL019549.Empty . -67.KM
Oakley	.	.180.TL007528.Traces .09-81.KM.JS.PD
Odell	.	. .SP966577.House .09-81.JS
Pavenham	.	. .SP988553.Traces .09-81.JS
Renhold	.Castle	.181.TL092509.Empty . -81.KM.PD
Sandy	.	.173.TL170487.Gone . -67.KM.PD
Salford	.	. .SP932393.Derelict .09-81.JS
Sharnbrook	.Stoke	.154.TL011591.Converted.09-81.JS.PD
Sharnbrook	.	. .SP999594.House .09-81.JS
Shefford	.	.192.TL147395.Traces . -67.KM
Shillington	.Otewell	.194.TL119356.House .09-81.KM.PD.JS
Stotfold	.	.186.TL224367.Complete .09-81.KM.JS
Stotfold	.Taylor's	.187.TL222384.House . -67.KM.PD
Tempsford	.Estate Saw Mill	. .TL157530.Empty .09-81.JS
Toddington	.Mill Farm	.171.TL022294.Incomp. . -67.KM
Tottenhoe	.Doolittle	. .SP990201.House .09-81.JS.PD
Turvey	.	. .SP938523.Converted.09-81.JS.PD
Willington	.Mill Farm	.182.TL118504.Traces . -67.KM.PD
Woburn	.ParkFarm	. .SP960332.Preserved? .PD

EXAMPLE OF A NUMERIC INDEX PAGE.

GB-WALES.

PANEL SM No.001-050.

WATERMILL INDEX.

INT.NAT. No	.GRID	.COUNTY .OLD-NEW	.PLACE/PARISH .NAME	.MILL .NAME	.CD.	.YR.	.RECORDERS .R1.	.R2.	.R3
001.	752259.	PM -DY	.St. Davids	.	.C	?.	65.	KM	
002.	744250.	PM -DY	.St. Davids	.Bishop's	.B	?.	82.		
003.	806259.	PM -DY	.Solfa	.Middle	.B	?.	82.	FG.	DJ
004.	95 24	PM -DY	.Nant-y-Coy	.	.?		.65.	FG	
005.	924137.	PM -DY	.Dreenhill	.	.?		.65.	FG	
006.	983016.	PM -DY	.Pembroke	.(tide mill)[corn]	.D	?.	65.	FG.	NMR
007.	991010.	PM -DY	.Pembroke	.Grove	.C	?.	68.	KM	
008.	753266.	PM -DY	.St.Davids	.Emlych	.C	?.	68.	KM	
009.	927199.	PM -DY	.Camrose	.	.?	5.	68.	KM	
010.	769273.	PM -DY	.St.Davids	.Gwyrhyd	.C	?.	68.	NMR.	KM
011.	984032.	PM -DY	.Pembroke	.Kingswood Farm	.C	?.	68.	KM	
012.	938087.	PM -DY	.Johnston	.Hayston	.D	?.	68.	KM	
013.	996205.	PM -DY	.Haythog	.	.?	5.	71.	DJ	
014.	997384.	PM -DY	.Dinas	.Hescwm	.A	?.	82.	DJ	
015.	853335.	PM -DY	.Abercastle	.	.	.	.NMR		
016.	942371.	PM -DY	.Fishguard	.Felin Isaf	.	.	.NMR		
017.	888350.	PM -DY	.Granston	.Great	.	.	.NMR		
018.	94350	PM -DY	.Granston	.New	.	.	.NMR		
019.	923137.	PM -DY	.Haverfordwest	.Denant	.	.	.NMR		
020.	959149.	PM -DY	.Haverfordwest	.Priory	.	.	.NMR		
021.	953162.	PM -DY	.Haverfordwest	.Town	.	.	.NMR		
022.	831274.	PM -DY	.Llandeloy	.Felin Wen	.	.	.NMR		
023.	967326.	PM -DY	.Llanfair Nant-y-Gof	.Trecwn	.	.	.NMR		
024.	821315.	PM -DY	.Llanrhian	.	.	.	.NMR		
025.	796310.	PM -DY	.Llanrhian	.Aber Eiddy	.	.	.NMR		
026.	834324.	PM -DY	.Llanrhian	.Aberfelin (corn)	.	.	.NMR		
027.	874223.	PM -DY	.Roch	.	.	.	.NMR		
028.	948198.	PM -DY	.Rudbaxton	.Slouth	.	.	.NMR		
029.	767245.	PM -DY	.St.Davids	.Cher Bwdy	.	.	.NMR		
030.	807245.	PM -DY	.St.Eloies	.Solva	.C	4.	82.	NMR.	DJ
031.	894361.	PM -DY	.St.Nicholas	.Felin Velindre	.	.	.NMR		
032.	809268.	PM -DY	.Whitchurch	.Caer-Forios	.	.	.NMR		
033.	806269.	PM -DY	.Whitchurch	.Middle	.	.	.NMR		
124.	884238.	PM -DY	.Brawdy	.Stooper's	.	.	.NMR		

Mills Research Group.
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EXAMPLE OF A DATABASE WATERMILL FORM.

```
      GRID:      .PLACE/PARISH:                              .COUNTY:
MILL NAME:                    .CONDITION:                      .RECORD DATE:
INDUSTRY:                     .ACTIVITY:                       .DATING:
WATERCOURSE:                  .SUPPLY?        .STORAGE?              .BACKWATER?
BUILDING,WALLS:               .ROOF:                    .FLOORS:  .BINS:
LUCAM:                        .KILN:                             .PEND:
WATERWHEEL:                   .DIAM    M.WIDTH    M.DEPTH    M.CONDITION:
ARMS:          .RIM:        .BUCKETS:        .SOLE:        .SHAFT:        .ADMHT
GEARING:                    .STEPS  .STONES:        .OVER/UNDERDRIFT:
1STGEAR:           .2NDGEAR:             .3RDGEAR:              .4THGEAR:
TENTERING:                  .DISENGAGING:                .STONE CRANE?
AUX DRIVE:                                .SACKHOIST DRIVE:
GRAIN CLEANERS:               .FLOUR DRESSERS:
SIFTERS:                      .ELEVATORS/CONVEYORS:
OTHER MACHINES:
OWNER:                  .USER:                    .RECORDER:
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EXAMPLES OF COMPLETED WATERMILL DATABASE FORMS.

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TL 001 GRID:282719.PLACE/PARISH:Houghton              .COUNTY:Cambridge
MILL NAME:Houghton            .CONDITION:Preserved      .RECORD DATE:06-83
INDUSTRY:Corn Milling         .ACTIVITY:Tourism         .DATING:18th C
WATERCOURSE:Great Ouse        .SUPPLY?Good    .STORAGE?Some     .BACKWATER?
BUILDING,WALLS:Weatherboard .ROOF:Tile              .FLOORS:5 .BINS:4th Floor
LUCAM:Yes,2                   .KILN:No                          .PEND:No
WATERWHEEL:Undershot Qty 3    .DIAM    M.WIDTH    M.DEPTH    M.CONDITION:All Gone
ARMS:          .RIM:        .BUCKETS:        .SOLE:_       .SHAFT:        .ADMHT
GEARING:Spurwheel             .STEPS  .STONES:10 Pair.OVER/UNDERDRIFT:3over,2under
1STGEAR:Bevel       .2NDGEAR:Bevel        .3RDGEAR:Spur         .4THGEAR:Spur
TENTERING:Screw               .DISENGAGING:Lifting Jacks  .STONE CRANE?No
AUX DRIVE:Crownwheel & bevel from Pitwhl.SACKHOIST DRIVE:Slipping Belt
GRAIN CLEANERS:               .FLOUR DRESSERS:Reel,Wire Machine
SIFTERS:?                     .ELEVATORS/CONVEYORS:Convevor
OTHER MACHINES:Sluice Governor with speed indicator dial
OWNER:National Trust      .USER:National Trust      .RECORDER:CAWWS
```

Discussion

Freedman — I am concerned with the safety of records kept in this way. What are the risks, in practical terms, of keeping them in magnetic form ?

Bryan — Every time a file is re-written after editing, it is a new record. If when the disk wears it is re-written onto a new disc, it will last indefinitely. The risk is to a mature file which then doesn't move; the thing will just sit there, not being re-written. A horror storey I hear this summer was when a colleague went on holiday for two weeks, leaving a pile of discs on a window sill, in the sun. When he returned, they were unreadable.

Freedman — How about in storage, such as in a cupboard ?

Bryan — I think that is fairly safe. Another thing that happens is if the lubricant dries out; the result can be mechanical seizure which chews up the centre. I think magnetic tape is safer for long term storage. It should be safe for 10 - 20 years without any problems. Beyond 20 years I wouldn't risk it. If we are putting 10 years field work onto one of these systems, we should heed the warnings.

Plunkett — Keep photocopies.

Bryan — The thing to do is to photocopy a printout and distribute a number of copies.

Jones — While we await the optical disc.

Bryan — That is write only; you can't alter it.

Jones — Exactly; that is just what is wanted for a mature file.

Freedman — How much work is it to print out each time ?

Bryan — Very little; an A4 page can be printed in about a minute. I could run the printer faster, but I don't, to reduce wear.

Freedman — How many pages for the whole thing ?

Bryan — So far we have about 1400 windmills and about 4000 watermills, and the maximum we get on a page is 60, so it is currently about 700 pages. The watermill file is likely to grow substantially.

Freedman — So if you made a complete printout every three years or so to make sure it didn't get erased, you would be piling up a huge amount of paper.

Bryan — Yes, but I think that from time to time you have to say, 'This is a mature file', print it, and put it in the file. At that stage, it could be double-sided.

Jones — I am sorry to have to raise the compatibility problem !

Bryan — Yes, that is difficult. I have found that I can often read other people's discs, and re-format and print the information, but there is no hope of writing to them.

Jones — Maybe that is all we need. We are not alone; practically everyone is getting into computer records. There are other groups who could use

our material, but for different purposes, while others have files containing some material we could use. This summer I found three; the Welsh Folk Museum, the Carmarthenshire Museum, and the Royal Commission on Historic Monuments in Wales. The all have computers, all owned privately by members of the staff, and they are all watching results, preparing for the day when they buy an official system. They could all use our complete files in their own areas, but they do not want to process them in the same as we do. Software portability is therefore irrelevant. They merely wish to avoid the vast key-punching job of getting our printed lists into their machine. We could use material from them in the same way. The need is therefore to present the contents of our lists in machine-readable form. Unfortunately, everone will act without reference to anyone else, it is quite unrealistic to suggest otherwise. I don't know what we can do about it.

Bryan — With text files there should not be too much of a problem, but with a database them is not much hope, because the program is resident in the system. Tape is a much sheaper medium than disc, so once the readibility problems are solved, I think that is the way to go.

Jones — I agree. The database should not be too much of a problem, though. Surely the data can always be printed out, and therefore transferred to tape in that format, which is what is wanted. The recipient can always read it. If he then wishes to re-format it to suit his own system, that is his problem, but it can always be solved.