GCG

NEWSLETTER OF THE GEOLOGICAL CURATORS GROUP

NUMBER 5 DECEMBER 1975

A. S. ALEXANDER AT HOME IN THE LATE THIRTIES

"In the Carnegie Library lay the work of the best years of Mr. Alexander's life just as if some ruthless hand had stirred them up with a porridge-stick. Specimens of one age mixed with another, and the tickets describing the various items mixed up in the general melee so that anyone reading them would need to have great faith and also great ignorance. I picked up and examined some of the rarer specimens, and, if so inclined, could have filled my pockets with them. There was no one sufficiently alert to stop me, and no one to even blow the dust off them."

The extract on the cover is from a letter written by an "Interested" person and published in the Ayrshire post on 22nd August, 1934.

Back numbers of Newsletters are still available at 50p. each (including postage). Remuneration must accompany all orders, which should be sent to Tim Riley, Sheffield City Museums, Weston Park, Sheffield S10 2TP.

Submission of MSS

MSS should be sent to the editor typed and double-spaced, please.

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Lines written after a lecture from Barney Newman (British Museum N.H.)

The Tyrant Overthrown

We used to think that Tyrannosaurus
Was fierce, aggressive and carnivorous,
Slaughtered everything he met
And harmless vegetarians et;
Or ran along beside the beast
And made of living steaks a feast
While Bronto with his tiny brain
Scarcely felt the pain.
The truth of course is otherwise
For though his teeth were quite a size
They weren't designed his prey to stab
But only rotting meat to grab.
No kingly predator was he
Exploding corpses formed his tea.
He didn't run or even stride
From hatching to the day he dide
But minced along on pigeon-toes;
And if he felt inclined to doze;
Sank on his tummy, chin on paws
And rose by digging in his claws
And pushing downward with his feet.
His fingernails remove the meat
Between his teeth which might decay
Eating carrion every day.
So ----------
Although he didn't exactly live
on cellulose
He wasn't nearly as tyrannical
and bellicose
As you'd think from the name they
used to call 'im
~~How~~ are the mighty fallen.

Frances Mansfield,
Dept. of Geology,
Bedford College.
January, 1969.

REPORT OF MEETING ON GEOLOGICAL SITE DOCUMENTATION, SHEFFIELD, 18th/19th SEPTEMBER, 1975

This two-day meeting was organised by the G.C.G. in co-operation with the Nature Conservancy Council and IRGMA (Information Retrieval Group of the Museums Association) with three objectives in mind:-

a) To identify the information requirements of the users of geological sites.

b) To explore in co-operation with the Nature Conservancy Council, the possibility of establishing regional museum based centres for the acquisition, storage and dissemination of information relating to sites.

c) To define in co-operation with IRGMA a suitable record format to allow for both manual and computer handling of this information.

During the first day contributions were given by a number of speakers, on three major themes: 'the site users viewpoint', 'museums as site record centres' and 'towards a national recording scheme'. Accounts of most of these contributions have been kindly supplied by the speakers and are included in this issue. The second day's proceedings were devoted to an assessment of a prototype IRGMA record card, the modified version of which is also reproduced opposite, and to discussion of the proposed recording scheme. Recommendations for implementation of the scheme were formulated and it was agreed thatthese should be put to the Ad Hoc Working Party formed at the May conference on Field Facilities in Geological Education. John Cooper and Mike Jones undertook to produce a report on the proposed recording scheme for circulation to the 50 delegates present and for submission to the Ad Hoc Working Party. This report is also reproduced in this issue. It was further agreed that copies of the IRGMA record card together with instructions for use should be made available for testing as soon as possible.

* * * * * *

THE NATURE CONSERVANCY COUNCIL'S VIEWPOINT AND EXPERIENCES

Background

The Nature Conservancy Council has been the government organisation involved in nature conservation since its establishment in 1949. A number of Acts, culminating in the Nature Conservancy Council Act, 1973, have

FRONT

Card of	File	Institution : identity No.	Part
Identification	Locality name	LAT. LONG. / NGR	Other coordinate value & units / accuracy
	Place name / detail	Identifier : date	
Cont	Boundary	ALT. / DEPTH	Other position value & units / accuracy
Description	Type of locality keyword / detail : date	Condition keyword / detail : date	

Part	Complex	Zone	Description keyword / detail : cross reference : identifier : date
	Rock	Age	
	Complex	Zone	
	Rock	Age	
	INTEREST		

Cont	Use keyword / detail : date
History Status	Status : date
People	Role / Name / address : date
Access	
Cont	Restrictions : date / Method

GEOLOGY (LOCALITY) RECORD CARD

IRGMA 1-10-75

BACK

VISITS	Visit reason : result : cross reference : visitor : date	
Cont		
Document-ation	L / Class	Cross-reference : author : date : title : journal : volume : detail
	L / Class	
Cont		
Notes	Notes	Map & Photo
Cont		
Record	Recorder : date	Copy sent

empowered the Council to protect and conserve the flora, fauna and physical features of Great Britain and to protect localities of scientific interest against development through the operation of planning law.

The Geology and Physiography Section of the Nature Conservancy Council has responsibility for seven National Nature Reserves which were acquired for reason of their high geological/geomorphological interest and is also responsible for over one thousand five hundred geological Sites of Special Scientific Interest. The latter are notified to local planning authorities who then are bound to consult the Nature Conservancy Council over any planning proposals they subsequently receive. This provides a degree of protection to such sites from development which would adversely affect their scientific interest.

On a conservative estimate, however, there are at least 100,000 geological field localities in Britain and there is thus formal protection for only about the top 1.5% of geological localities. However, close liaison between the Nature Conservancy Council, local County Trusts and county planning departments does lead to informal protection being extended to a further number of sites.

Overuse or misuse of certain sites by geologists can lead to the deterioration or destruction of their interest and this has become an additional problem over the last few years especially as it cannot be solved by operation of SSSI planning controls. Since no legislative system can be devised to curtail this overuse of sites, the Nature Conservancy Council together with a number of other interested organisations are considering various new ways of controlling use. Following the May conference "Field Facilities for Geological Education" sponsored by the Conservancy, an ad hoc committee containing representatives from museums, trusts, universities, schools, and planning authorities has been established to consider this problem and a number of conclusions have been already reached.

Use of Geological Sites

The number of field localities remains fairly stable but the number of people using them is increasing as geological education grows at all levels from primary schools to universities and as amateurs become involved through extra-mural classes and local societies.

Localities used for field education are in general selected from a restricted number of sources, such as field guides or experience of previous field excursions. There is thus a focussing of attention upon a comparatively few sites as is demonstrated by the results of various school and university field work surveys carried out by the Conservancy; these show that the number

of sites used by present educational parties is only a very small fraction of the large numbers potentially available. A means to promote the use by educational parties of a larger number of geological localities and to spread information concerning additional sites suitable for education among site users, could redistribute the impact of rising levels of field education and spread the load away from the currently overused "classical" sites.

Research workers can be regarded as having a bona fide reason for using specific specialist localities but it is unfortunate that there is often pressure upon the same localities from educational parties and fossil or mineral collectors. It is unlikely that collectors will be influenced by requests to move from vulnerable sites, but it is likely that others could be brought to respect the conservation motives behind such requests.

Information Sources and Systems

The Conservancy's survey of 623 museums, county trusts, county authorities and field studies centres has revealed that over 100 hold some records for geological localities, although the extent of the coverage is highly variable. There are large areas of the country not covered by records held by any organisation, whilst in some regions records are duplicated at a number of centres. The plans now going ahead to promote a national site recording scheme should prevent further proliferation of such duplication.

Table 1

Survey of Organisations with Geological Site Records

Number of organisations surveyed	623
Replies (to 13th October 1975)	429 (i.e. 68%)
No records on geological sites	321
Some records (1-20 sites recorded)	57
Many records (over 20 sites recorded)	51

It is suggested that all recording centres already in operation or to be set up under the wing of a national scheme should be involved in the provision of advice and information to geological site users. Most of the record holding organisations, principally museums, could be involved in such data supply as a logical part of their function. Further, it is suggested that all localities noted by any recording centre should be assessed for educational suitability. The ability of a locality to stand up to hammering together with size, safety and access arrangements, needs to be considered to avoid future problems.

It would be beneficial if the condition of a site as regards usage, vegetation, and safety were re-assessed occasionally so that any deterioration could be noted. Such assessment could be done most readily by site users or local trust and geological society members, who, it is hoped, would already be supplying site information to local centres.

Field Guides

Field Guides were evolved, originally, to provide information on field trips in areas unknown to their reader. At present, they lead to a high proportion of overuse problems and as a result the organisations sponsoring them are being forced to reconsider the policy behind them.

It has been proposed by various geologists that field guides should not list one specific site for each formation or feature described but should provide a number of alternative sites leaving the choice of which to visit to field users, thus spreading the educational impact more widely. At the same time Guides should, also, contain more information about educational levels of the trips, access arrangements and ownerships. A short section emphasising the need to follow the Country Code and the Geological Code of Conduct would be welcome.

Provision of alternative sites, in some cases, will prove to be impractical but a review of a number of the itineraries listed in the Geologists Association Guide of the Weald found that most beds described could also be seen at two or more alternative localities. The information concerning suitable alternative localities obtained by recording centres could be incorporated in subsequent editions of field guides and thus be widely disseminated.

It is clear that the overuse problem is unlikely to be solved by diversionary moves alone. Expansion of the numbers of sites used for education will help relieve the pressure but must be accompanied by attempts to influence and improve the standard of behaviour of parties. It is hoped that all organisations involved with the supply of information on field localities will help communicate the need for their conservation to all inquirers.

Appendix

Pilot Projects on location of sites

Attempts have been made to locate unknown, and therefore unused, geological exposures *ab initio* through the use of maps and scientific literature.

1) Surrey

All geological sources of information such as Geological Survey Six Inch Maps, Survey Memoirs, known literature and field guides were used and 3,500 possible localities were identified.

Survival rate of sites in a county where there has been much development in recent years would be expected to be fairly low, but a field examination over part of the county shows a survival rate of about 30%.

2) Berkshire

All geological sources mentioned above were used together with $2\frac{1}{2}$ inch Ordnance Survey maps and 890 localities were identified. Of these, 159 (18%) retained some exposure.

Locality identification using all the sources is very time consuming but it was found that of the 890 localities found initially, 701 (79%) were located from notations on $2\frac{1}{2}$ inch O.S. maps and it is therefore suggested a useful first approximation can satisfactorily be achieved by use of these maps only.

The time taken for the full Berkshire Survey including field assessment was just over one month but this does not include detailed geological appraisal work on each surviving exposures.

The use of aerial photos of recent date would enable the identification of these sites which still show exposures without having to fall back on field verification; this would save about half the time and more than half the expense involved.

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* * * * *

PROTECTION AND ADMINISTRATION OF IMPORTANT GEOLOGICAL SITES

It may at first sight seem strange that a member of the Nature Conservancy Council's Regional staff should be asked to stand in for Dr. Johnson during a session devoted to the 'users viewpoint'. However, many of the problems which affect the user of a site area of the kind which relate to its conservation also. Clearly the first requirement from the viewpoint of both the visiting geologist and the conservation officer is the protection of an exposure from being obscured or destroyed. Secondly, and perhaps of less importance from the conservation point of view, although of great significance to the user, is the state of the site and means of access.

The Nature Conservancy Council is most heavily committed to the first of these requirements, protection. In this context it is perhaps most appropriate that I should discuss the problems as they relate to sites scheduled under Section 23 of the National Parks and Access to the Countryside Act 1949 as Sites of Special Scientific Interest. It is the statutory duty of the Nature Conservancy Council to notify the Local Authority of these sites (for geological sites we rely on the Geology and Physiographic Section to indicate those of special interest) and thereafter the Regional Officers, when approached under normal consultation procedures, attempt to ensure that developments, which require planning consent, do not destroy the scientific interest.

As far as the second requirement is concerned we do not often become involved in attempting to maintain sites in a clean condition. Very occasionally we do arrange access and we attempt to keep interested persons informed of any changes regarding access to particular exposures. In a sense our only administrative function is one of detailing ownership of the sites and informing the owners of the scientific interest.

Our attempts at protecting sites are hampered under normal circumstances by two factors:

i) that the site is usually privately owned and, therefore, Nature Conservancy Council has no control other than through influence on planning decisions, unless the owner is particularly sympathetic,

ii) manpower; in the north-east there are some 150 Sites of Special Scientific Interest, 53 of which are scheduled on geological grounds alone, and in a further 17 geological features are a secondary interest. Clearly with only 3 regional staff employed to cover these sites scattered over a large area, our manpower resources are somewhat limited.

Such successes as we are able to claim may well be no more than situations where we have, as yet, encountered no problems. This happy state of affairs occurs most commonly where the continuing use of the site is compatible with the maintenance of the geological exposure. For example, the exposure may be incorporated as a landscape feature, as has happened with the former quarry face which shows the brecciated Middle Magnesian Limestone (Permian) at Boldon Golf Course SSSI, County of Tyne and Wear. In other situations it may be possible to retain exposures created by road construction works, such as at Hylton Castle Cuttings SSSI, County of Tyne and Wear, where reef limestone of the Middle Magnesian Limtestone (Permian) is shown. The continued excavation of quarries which show important strata seldom conflicts with conservation requirements, although there may sometimes be difficulty of access.

Where an application for permission to use a scheduled site involves the possible obliteration of the exposure, an attempt is made to reach a compromise such that the more important features are retained. However, in some instances the normal consultation procedures have proved insufficient to safeguard a site. For example, although a housing development did not threaten the existence of the historic locality for Permian fossils at Humbledon Hill Quarry SSSI, County of Tyne and Wear, it has resulted in difficulties over access. During the course of consultations with the Planning Authority, agreement was sought for the retention of reasonable public access to the exposure, and indeed the permissions granted for the housing development included such a condition. A row of houses has been constructed across the only access route, but we have recently been able to confirm that access to the exposure is still possible, albeit through a private garden with prior consent of the owner. While this imposes limitations on the educational use of the site its value for research purposes remains unimpaired.

Problems occur more frequently where worked out quarries incorporating important exposures are required for tipping. Clearly in many instances this type of development is likely to result in the complete loss of the exposure. At other times, such as at Coatham Stob Quarry SSSI, County Cleveland, where there is an exposure of the Cleveland Dyke with overlying glacial drift, the disposal of toxic and other waste can make a site so unsuitable for visiting that it can no longer be considered of sufficient interest and importance to justify its continued designation. In this particular case where tipping was in progress before the original notification it is fortunate that there is in existence an alternative site suitable for SSSI designation.

I have perhaps painted too glum a picture of the situation, for successes are achieved sometimes after we have been involved in a long continued dialogue aimed at securing the preservation of valuable features. For example, again in the County of Tyne and Wear, it has proved possible to agree a tipping level with the local authority at Ford Limestone Quarry SSSI. This allows for the retention of the most interesting part of the exposure, showing a section through the Magnesian Limestone rich in fossils, despite the loss to the authority of several thousand pounds of potential revenue from tipping.

The successful outcome was not achieved without some problems. The original agreement was reached before local government reorganisation and, no doubt, as a result of the change in status of the department concerned at that time, the agreement appeared to have been overlooked. After some prodding and a site visit, which confirmed that tipping had already started, a map showing the final tipping levels was produced by the authority now responsible. A modification was required in order to fully safeguard the exposure and to fulfil the earlier agreement which I believe has now been approved.

The life of this quarry covering approx. 10 acres, and with a maximum depth of 100 feet for tipping purposes, is estimated at two years. This illustrates the speed at which important sites can be lost and the need for frequent visits in order to maintain adequate monitoring of their condition.

Clearly while we are in the position to maintain continuity in site protection we cannot do this without assistance. For adequate documentation site visits should be made at least once each year and in the absence of sufficient manpower to achieve this, reports by users of Sites of Special Scientific Interest would, if passed to us, help keep us appropriately informed. If we are not called in until the last minute when destruction of the site is imminent, it may not be possible to influence the situation or obtain modification of a proposed development. In one particular case where a site was being rendered unusable it was subsequently discovered that the local district engineer had suggested its use for the disposal of sewage. When it was pointed out to the gentleman concerned that the site was a scheduled site of geological importance it was quickly agreed that the tipping should stop. In this case even the local authority appeared unaware of the site's importance. Prompt action by the Nature Conservancy Council, following receipt of a report from a local geologist, helped prevent loss of the exposure. However, there is still an aroma over the site which perhaps should have been avoided.

There are instances where, despite active involvement by local authorities, the Nature Conservancy Council and interested users, the satisfactory arrangements for the retention of an exposure cannot be concluded. The owner may have long standing planning consents or have obtained existing use rights, and in these cases protection of the site will depend entirely upon the sympathy with which he views the aims of conservation, and perhaps of conservationists.

Since this is a meeting concerned with documentation, might I raise one further point. As already indicated a number of Sites of Special Scientific Interest have botanical and geological interest. If these are to be visited by parties of geological students, they should be aware of the botanical interest. This is particularly important in some of the sites in Durham where the magnesian limestone quarries provide secondary habitats for many typical limestone plants such as the dark red helleborine and frog orchid which are susceptible to trampling. Clearly the inclusion of this information is essential to the proper documentation of the sites. The Regional Officers of Nature Conservancy Council should be able to provide such information.

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GEOLOGICAL SITE RECORDING IN DERBYSHIRE - AN INDUSTRIAL BONUS

Derbyshire is rich in both quality and quantity of geological sites reflecting the diversity of rock types, the varied topography and man's extractive endeavours; there are some fifty SSSI's within the county and many more of interest. These sites are under constant pressure from geological parties, local authorities and industry. Geological parties tend to visit certain sites more often than others and these have in recent years suffered greatly from almost continual use; a problem in every part of the country. Industry and local authorities are constantly trying to enlarge existing quarries, fill old ones with waste, build or widen existing roads, build more houses and provide more water. All these operations put pressures on sites.

I had been recording site information when collecting specimens for about three years but I realised that because of pressures on sites more information on many more sites was required. I reasoned that this information could be used for three main purposes. Firstly to relieve the pressures on SSSI's by finding alternative sites; secondly to provide information on the condition of sites to organisations such as the Nature Conservancy for the safe guarding of those sites. The third purpose would be to provide information to geologists visiting the county. This would be reciprocal in that they would report on the condition and usage of the sites and/or the area visited.

There were no recording cards available for geological sites so I decided on a suitable format after studying site record cards already in use in the museum. These were the C.B.A. archaeology and industrial archaeology, Biological Record Centre and Flora of Derbyshire cards. Index cards (8" x 5") and field sheets were printed. The latter are slightly larger, printed on paper and are intended to be completed in the field and returned to the museum for transfer of information to index cards. A sheet was also produced to indicate to users the information required.

A 'cry for help' to local geologists was kindly circulated through the East Midlands Geological Society newsletter but the response was poor. Therefore over the last two years I have endeavoured to record and photograph all SSSI's in the county and have also been systematically recording all exposures 6" map by 6" map. This, because of convenience, has been mainly in the southern half of the county. The index cards are filed in 6" map order and I am at present studying the possibility of using numbered dots on a transparent overlay on 6" surve- maps to mark exposures or groups of exposures.

These are briefly, the reasons why and how the site record scheme was started in Derbyshire - Now to the Industrial bonus.

We have recently opened a new Industrial Museum where extractive industries are well represented and together with the Keeper of Industry we have started our records of these industries from scratch. Consequently geological information is included and considered a vital part of the records.

The diversity of the extractive industries in Derbyshire over the centuries has produced many hundreds of man-made exposures - quarries, pits, mines, adits and open-cuts. In 1906 there were over 330 working quarries and if all the working coal and lead mines, gravel pits etc., are included then the number of 'holes' would probably exceed 1000. Now sadly that number is nearer 100 and almost half of these quarry limestone for one purpose or another. Sadly, because this number hardly reflects the diversity of production of the last

century. Some thirty different rocks and minerals were being extracted in the 1880's. Of these Tufa, Pyrite, Manganese, Ochre, 'Marble', Rottenstone, Ironstone, Petroleum, Iron Ore, Silver (From Galena), Calamine, Zinc blende, Galena (except as a by-product in Fluorite extraction), and Igneous road stone are no longer extracted.

The legacy of this industrial enterprise of the 18th, 19th and 20th centuries is disappearing or has disappeared. Plant, associated buildings and transport systems are in ruins, overgrown or gone. Indeed, the majority of the many coal mines of only twenty years ago have vanished completely. Only ten deep mines are now in production in the North and South Derbyshire fields.

Therefore it seemed obvious to record industrial information e.g. type of plant, number and use of buildings, water sources etc. when visiting man made exposures. Whilst it is not always possible to record full details at least a note can be made for a further visit by the Industrial Museum staff.

Our industrial records now contain much geological information and vice versa. The records include locations of old coal, ironstone and lead mining shafts, depths of seams, clay holes, quarry produce and sections. We also have access to records of mines and shafts kept by the County Archivist, the Peak District Mines Historical Society and the N.C.B. Much information has come from literature searching and old O.S. maps. We are fortunate in that we have all the new series O.S. 6", all 1921 O.S. 6" and all 6" Geological maps so far produced and access to the 1887 First Series O.S. 6" maps of the county. These are used in conjunction and are invaluable for locating and naming disused quarries and mines, old shafts etc.

I see the recording of industrial information as an integral part of geological site recording in Derbyshire which is so rich in industrial history.

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* * * * * *

THE ROLE OF A COUNTY MUSEUM SERVICE IN GEOLOGICAL SITE RECORDING

In this account of the role of a county museum service in geological site recording, I shall be referring exclusively to experiences with the Leicestershire County Museums Service and its predecessor, Leicester City Museums.

Geological site recording commenced in 1970 when the basic filing system for the county was set up and files were opened for all working quarries. This was largely a response to the need for storing information collected during field-work and for collecting together all published information relating to these sites for immediate reference. Since then the coverage has been gradually extended to include all known quarries, cuttings, major outcrops and temporary sections. Site investigation reports and bore-hole logs have also been added and further extension is envisaged to cover stream-sections, mines and minor outcrops.

I. Geological site records

The system involves use of standard filing equipment comprising at present, four, three-drawer cabinets with filing pockets, into which is placed a file for each locality recorded, each file containing all the information relating to that locality. Each locality file is identified by a grid reference (8 figure for small sites, 6 figure for larger ones) corresponding with the position of a marker pin in a wall mounted 1" mile O.S. map, which acts as a key for locating any file in the system. All locality files within a single 10 km grid square are filed together and all the 10 km units for each 100 km square are filed sequentially from 00 to 99. If the file for a particular site is required this is located on the key map, the grid reference determined and the file rapidly located.

For those areas of the county where sites are so numerous that the 1" key map is inadequate, a 6" key map is used and the files grouped in 1 km square units. This is applied to the Charnwood area of Leicestershire where we have 238 major sites recorded for 83, 1 km grid squares and a potential of over a thousand if all outcrops are eventually recorded.

The system described is adequate for storing and recovering information relating to most quarries, outcrops, stream sections, canal and railway cuttings, as well as temporary sections and important bore holes. It could theoretically be extended to include all bore-hole logs but we find it more convenient to store this information separately as it is usually

in the form of site investigation reports. The sites involved are indicated on a 6" to the mile O.S. key map for the city (the main area covered) and the reports filed as for other locality files. Site investigation reports for major civil engineering projects such as motorways reservoirs etc. are also filed separately. Over 2000 bore hole logs in 110 separate reports are maintained in this way.

A card index using comprehensive cards of the IRGMA type would greatly facilitate use of the system and would provide indirect access to the information anywhere where duplicate cards are housed.

Information stored in the files includes:-

a) Details of location and extent of the site; usually a xerox copy of the 6" O.S. map.

b) Details of ownership, tenancy, access, permits, conservation status (i.e. SSSI or SSI), and County Trust involvement.

c) Xerox copies of, or references to all published accounts of the geology and history of the site. Staff field notes and reports relating to the site.

d) All correspondence relating to the site.

e) Photographs.

The majority of sites and information relating to them were located by reference to the following sources:

1) Maps - the $2\frac{1}{2}$ inch O.S. maps are adequate for most purposes but 1" and 6" O.S. and Geological Survey maps also have their uses. Comparison of different editions, provides valuable historical information.

2) Geological Survey memoirs.

3) Other publications on the geology of the area, e.g. Geological Association Guides.

4) Trade Association and Government Department publications, e.g. Directory of Quarries and Pits (Institute of Quarrying), Guide to Coalfields (Colliery Guardian) and lists of miscellaneous mines from Department of Energy.

5) County Archives for estate maps etc.

6) Local contacts, e.g. County Trust, local geology society, university, schools, County Planning Department etc.

7) Field Work.

Apart from filing equipment, maps and publications, costs are difficult to evaluate. Some figures have however been compiled for certain aspects of the running costs and these may be of interest to those contemplating involvement in site recording. A literature search of all known maps, publications and archival material relating to the Charnwood area (83 sq km) of Leicestershire, for example, took 35 man-days, all relevant information being abstracted, largely by xeroxing, resulting in 238 site files. The work was undertaken by a student during vacation at a labour cost of £105. Xeroxing facilities have proved to be extremely valuable in abstracting information for incorporation into files and it has been calculated that for 350 files some 1500-2000 xerox copies have been used at a nominal cost of £75-£100.

II. Users and Uses of site information

As already mentioned, the primary motivation for establishing the site filing system was to facilitate access to all information relating to specific geological localities. The museum service was and still is the primary user, the value of the system being that it improves access to a large proportion of the geological information relating to the area served by the Museum. This has considerable relevance to theefficient functioning of the service. For example, being a county service our collecting policy is heavily biased towards the county and in terms of research material, the acquisition of large quantities of precisely stratified and localised lithological and palaeontological samples. All material of this type from a particular locality is stored and documented as a unit, the management of which is greatly facilitated by the existence of an appropriate site-file. To take another example from an entirely different sphere of museum activity, we shall shortly be preparing a design brief for an exhibition on the topography, geology, land use and extractive industries of the Charnwood District of the county. By reference to the appropriate site files we have immediate access to most of the basic information required; information which would otherwise take weeks to assemble.

These are just two of the many examples which could be given but perhaps they will suffice to emphasise the direct benefits which a site filing system can provide for a museum service.

Indirect benefits also accrue from the provision of a consultancy service, based on this information resource, to the many outside users of site information. The Nature Conservancy Council, County Planning Department, County Trust, researchers, teachers, and interested members of the general public are, in our experience, the main 'clients' and the

value to them of such a service is in part the subject of a number of the other contributions to the Newsletter. Rather than repeating what is stated elsewhere it is perhaps sufficient therefore only to emphasise the benefits to the museum which liaison with these 'clients' provides. Museums, whether they like it or not are in the same political arena as all other local government services, competing for finance. Their success or failure in this respect depends largely upon an ability to convince committees that museum services are relevant both to the needs of the community and to the organisation which serves it. Geological site documentation, which caters for some of the information needs of planners, educationalists and conservationists can play an important role in improving the relevance of museum services to present-day needs.

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GEOLOGICAL SITE RECORDING AT BRISTOL MUSEUM

Information about geological sites is kept in both the Geology Department and the Schools Department of Bristol Museum.

Geology Department:

A card index is basically used as a source of information relating to specimens in the Museum collection. However it is also used to answer queries from research workers, the Nature Conservancy and County Trusts. This information is regarded as confidential and is not available to the general public, collectors or teachers.

The area covered by the index has been determined by the Museum collecting policies past and present and it basically consists of Avon, south Gloucestershire, west Wiltshire and north Somerset. In addition there are records for areas covered by major collections in the Museum which have come from other parts of the country.

It is intended that the index should contain information about all geological sites in the region, past and present, as well as the more important temporary exposures.

Schools Department:

Information about geological sites is recorded using a card index, a base map, and files for the main teaching localities. This information is freely available to schools and colleges, as well as the general public. The main use of the information is to supply local teachers with details of sites which are accessible to them and which suit their particular requirements. Since requests range from fossil collecting sites for primary schools to stratigraphical traverses for A-level geology groups, the system must be suitably flexible. There is therefore no intention of publishing lists of sites.

The area covered by the site records is similar to that covered by the Geology Department, although this has mainly been determined by the cost and time of transport for Avon schools, in terms of day trips.

The intention is to provide duplicated information about the main teaching sites, mainly for CSE and GCE geology groups but also, in some cases, for primary and lower secondary groups. The index cards are mainly used to provide information about outcrops which are used by schools studying the geology of their local environment.

Conclusion:

It is estimated that the Schools Department will eventually have files of duplicated information on approx. 50 teaching sites, and index card information for approx. 500 other outcrops. The Geology Department anticipates having records for approx. 5,000 localities.

Although there must be some duplication of records within the Museum, the information does serve different purposes and is provided for different users. This situation has developed since there are staff separately involved in curatorial and educational work, and, although there is considerable liaison between departments, separate records have proved to be more convenient.

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GEOLOGICAL FIELD FACILITIES: EDUCATIONAL NEEDS

Teaching staff and students are obviously potential consumers of the results of geological site documentation, and so have an obligation to be contributors as well. They are also a potential danger to some sites. Therefore the interests of educationalists in documenting geological sites involves both the collecting of data, and the management of the way in which such information is disseminated.

Why is field work considered so important by geology teachers at all levels? Examination of CSE and GCE syllabuses (see Lilley & Wilson 1975, Thompson 1974) gives little help to guide the design of geological site documentation, save that an indication of the number of days to be spent in the field is given and that credit will be given for including field evidence in examination answers. Published information on degree courses is no better; for example the CRAC guide for Earth Science courses stresses the observational nature of field work. Small wonder that many geological field visits are planned on the "homing-syndrome" basis, whereby leaders return to localities to which they were taken as students. Clearly, documentation could help shift the load from over-used classic areas by providing information about little used sites. Such information should include data on the solid geology, but also what can be done by students during visits.

Documenting tasks that can be undertaken by students involves a consideration of the objectives of field work. Field work can help achieve the generally accepted objectives of science teaching in an "outdoor laboratory" situation; such achievements can be categorised under four headings:

1. Concept attainment: bringing alive rather abstract classroom studies; e.g. studying a map of an area and then visiting it; realising the scale of geological phenomenon.

2. Practical skills: (a) manipulation: e.g. of a clinometer, tape measure, hammer. (b) measurement: dip, strike, bed thickness; (c) recording: field notes, maps, graphic logs.

3. Intellectual skills: identifying problems, devising ways of testing them by seeking field evidence; writing reports based on field data.

4. Motivation: there can be no doubt that field visits, properly planned, can excite the most reluctant of students!

Thompson (1974) gives a more detailed discussion of items 2 and 3, and in his 1975 paper, shows how such objectives may be achieved using quarries which many planners of field excursions would overlook, or perhaps judge as inadequate for their purposes.

Thus documentation of sites should wherever possible include information on their use for teaching purposes as an aid to communication between teachers. There must be many field exercises that concentrate more on skills than "Cooks-tour" geology, but at present they are known only to their authors, or perhaps to local teachers groups. Documentation of sites and associated teaching materials could aid communication between teachers, and so divert some parties from overused localities. However, the originators of such materials will probably need convincing that the places they at present visit will not be abused by other users of Site Documentation - and that leads to the problem of the management of documentation.

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A NATIONAL SCHEME FOR THE DOCUMENTATION OF GEOLOGICAL SITES

1. Objectives

(a) To encourage geological site documentation in museums and similar institutions, primarily as an information resource for improving museum functions and services and secondarily for the users of such services.

(b) To establish a common documentation standard which will facilitate national co-ordination in the conservation of geological sites and the use both of sites and the information relating to them.

2. Outline of scheme

It is proposed that the first objective be met by recognising local centres, largely museum based but not necessarily so, which will collect, collate and store information relating to geological sites within a specified area. The area to be covered by each centre will in the first instance be decided by the centre itself with boundaries agreed upon in consultation with neighbouring centres. Where boundaries and/or interests overlap, active and passive responsibilities should be assigned mutually for the benefit of the Centres concerned and of the scheme itself. The resources of finance, materials and geological expertise available at each Centre will determine the extent and depth of recording, but minimum requirements and standards, to be laid down in the near future, should be adhered to wherever possible. These requirements and standards will be recommendations concerning the collection, collation, storage and nature of information to be acquired.

At each Centre the primary record source should be devised to suit the requirements of that Centre. It may be at the one extreme a simple card index, at the other a comprehensive filing system containing a considerable volume of information, in a variety of forms and for a variety of purposes. To achieve the second objective however it is essential that a site record card currently being developed in co-operation with IRGMA be maintained for each site recorded. This can be used as the primary record source and in many cases will be, but it can also be used in conjunction with site files as a means of improving access to the information they contain. Its over-riding purpose is however to facilitate information retrieval on a national scale to which end it is designed for both manual and computer use.

A list of probable Centres as at the time of writing, together with maps indicating the areas which they propose to cover is appended.

3. Co-ordination

It is essential if the second objective is to be achieved that a permanent co-ordinating body be established to oversee the implementation and development of the scheme.

It is recommended therefore that the ad hoc Committee established at the Conference on Field Facilities for Geological Education be formally constituted as a Steering Committee for Geological Site Documentation with terms of reference to be agreed by all interested parties, sufficient to implement and maintain the scheme. This Committee if so formed is directed to implement the following proposals adopted at the joint GCG/NCC/IRGMA meeting on Geological Site Documentation held at Sheffield on 18th/19th September, 1975.

(a) To produce firm proposals for the structure and practice of regional geological site record centres.

(b) Make proposals for central co-ordination.

(c) Seek a national organisation to sponsor these proposals and take responsibility for co-ordination.

4. Finance

It is recommended that financial aid be sought by the Steering Committee for two purposes:

(a) To cover central administrative costs.

(b) To meet at least in part the costs of materials and manpower required at the local level.

Although preliminary enquiries regarding finance have been encouraging it is not yet possible to give definite advice to prospective Centres on this matter. Such advice will be made available in due course.

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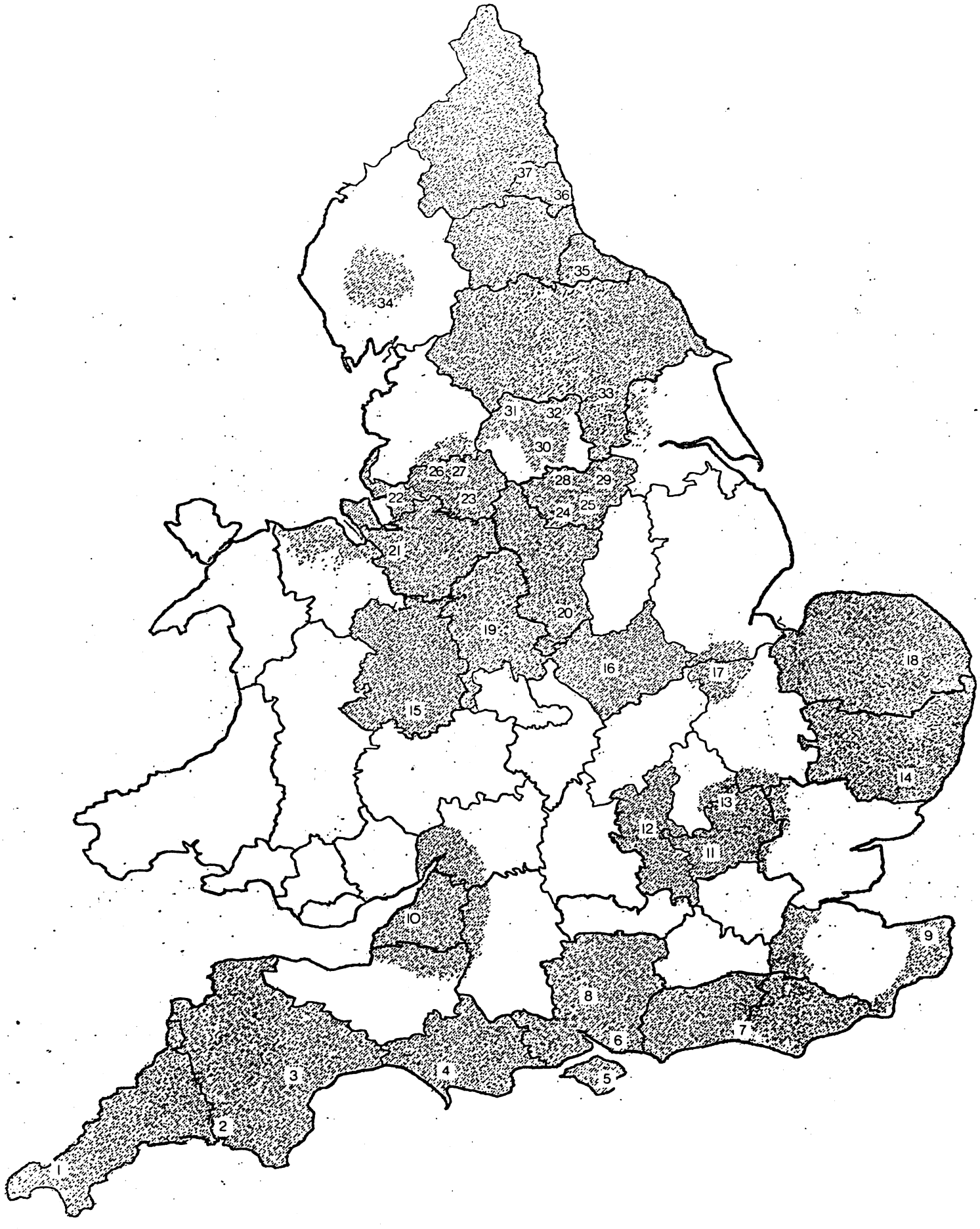
Proposed Centres for Geological Site Documentation up to 8th October, 1975

The two maps on pages 227/228 show the institutions which have shown an interest in becoming local centres for site documentation and the areas that they might be responsible for. Generally speaking these areas of responsibility have been defined by county boundaries except where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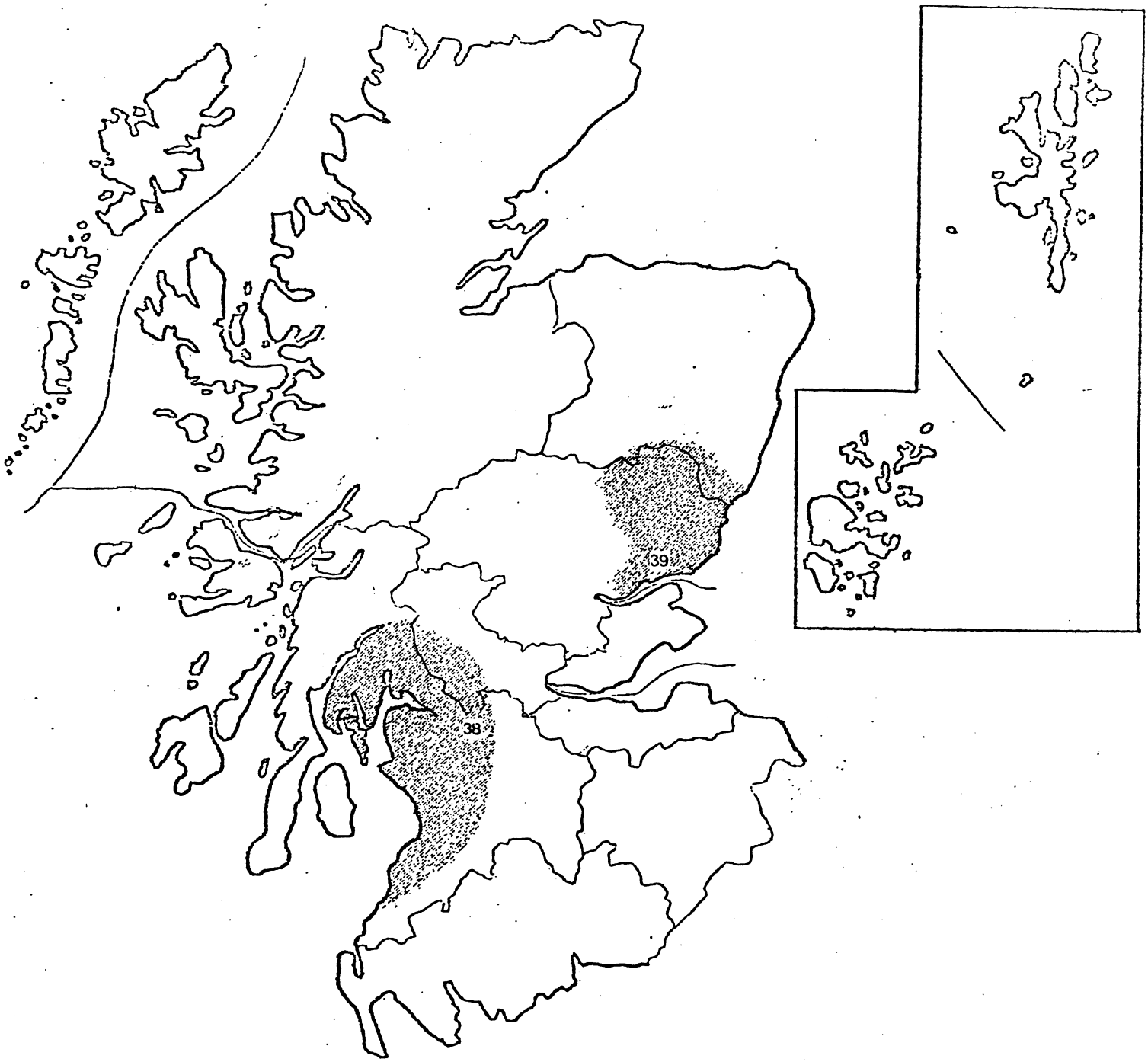
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tradition or lack of neighbouring coverage make it expedient to cross them. The blank areas do not necessarily show regions of nil documentation, rather that a suitable centre for storage and dissemination of information has not yet been found. Indeed, much information is held concerning these areas and it is hoped that progress can be made in the near future towards covering the greater part of Great Britain. Also, other organisations throughout the country are considering the part that they might play in the scheme and may be able to offer their services at a later date.

Any information about active documentation in any area will be gratefully received.

1. Camborne School of Mines
2. Plymouth City Museum and Art Gallery
3. Exeter City Museum and Art Gallery
4. Dorset County Museum, Dorchester
5. Museum of Isle of Wight Geology and Palaentology, Sandown
6. Portsmouth City Museums and Art Gallery
7. Booth Museum of Natural History, Brighton
8. Hampshire County Museum, Winchester
9. The Royal Museum, Canterbury
10. Bristol City Museum and Art Gallery
11. St. Albans City Museum
12. Buckinghamshire County Museum, Aylesbury
13. Letchworth Museum and Art Gallery
14. Ipswich Museum
15. Salop County Museum, Ludlow
16. Leicestershire Museums
17. Peterborough City Museum and Art Gallery
18. Castle Museum, Norwich
19. Staffordshire County Museum, Shugborough
20. Derby Museums and Art Gallery
21. Grosvenor Museum, Chester
22. Merseyside County Museum, Liverpool
23. The Manchester Museum, Manchester University
24. Sheffield City Museum
25. Municipal Museum and Art Gallery, Rotherham
26. Central Museum and Art Gallery, Bolton
27. Bury Public Library, Art Gallery and Museum

28. S. Yorks County Council, Barnsley
29. Doncaster Museums and Art Gallery
30. Bagshaw Museum, Batley
31. Keighley Museum
32. Leeds City Museum
33. The Yorkshire Museum, York
34. Brockhole National Part Centre, Cumbria
35. Cleveland County Museum, Middlesborough
36. Tyne and Wear County Museum, Sunderland
37. Hancock Museum, Newcastle University
38. Glasgow Museums and Art Galleries
39. Dundee City Museum and Art Gallery

Other Institutions concerned

British Museum (Nat. Hist.)
Queen Mary College, University of London
Shropshire County Trust
Passmore Edwards Museum

Michael D. Jones and John A. Cooper,
Leicestershire Museums and Geological
Curators' Group.

GEOLOGICAL COLLECTIONS AND COLLECTORS OF NOTE

9. ALEXANDER SHARPE ALEXANDER and his COLLECTION

Alexander Sharpe Alexander was born on the 22nd August 1860 at Balhearty, Tillicouty, near Stirling, the seventh child of his parents. At four years of age his family moved to Sheardale, also near to Stirling, where he attended the local Academy until 1878 when he entered St. Andrew's University, Edinburgh.

After obtaining his M.A. at St. Andrew's in 1881, in traditional subjects, i.e. Latin, Greek, German, French and English, he took up a teaching post at Newton Stewart Academy. Then, for four years, followed teaching posts in Canonbie, Dumfrieshire, and Alva Academy, Stirling. He began to suffer from overwork and overworry at these posts and so after a short stay in London, returned to Edinburgh to recover his health. It was here that Alexander realized that although he could teach Latin and French etc., he felt that he could not be a completely adequate teacher unless he could teach Natural History too. "Is it possible that I am an M.A. and don't know the structure of the daisy?" From that time on Alexander spent all his available time in the Edinburgh Museums studying and drawing the exhibits in Zoology, Botany and Geology. This led him to begin his "tramps" across country, appreciating nature and collecting objects of interest. These "tramps" he later published in book form.

He continued teaching traditional subjects for some time in a series of schools throughout Scotland but all the time he was learning about natural history and adding to his collection.

In 1892 as he was suffering from nervous dyspepsia he was medically advised to seek a holiday and rest Consequently he spent eight months or so in Canada working on a Prairie settlement. Although he felt better for his trip abroad he was not cured of his dyspepsia. He took a job as a clerk, in Edinburgh, as he did not feel well enough to continue teaching. He continued to feel ill until one day he fainted from sheer exhaustion (and the effects of a gum boil) and was successfully treated in Edinburgh of his dyspepsia.

He then resumed his teaching of traditional subjects, first in Falkirk and later at Annan Academy, but Alexander still studied natural history in his spare time.

In 1897 he was, at last, able to teach natural history when he managed to obtain the post of a teacher of Geology, Advanced Physiology and Higher

English at Girvan High School, Ayrshire. After teaching successfully there for some while he was transferred to Ayr Academy which, unfortunately, taught no natural sciences. It was five years before Alexander could introduce natural sciences to the Academy in the form of a display of mounted plants. He also managed to persuade the authorities to allow him to hold evening classes in Geology and Botany at the Academy - these appear to have been immensely popular as they continued to run for five years until Alexander was transferred to Ayr Grammar School. At Ayr Grammar School Alexander was allowed to teach "Natural Knowledge" to various classes.

By the turn of the century Alexander's collection of objects of natural history was becoming quite large and he decided that it should be put on display so that the general public could appreciate, and at the same time learn about, natural history. Alexander experienced great difficulty in finding somewhere to house his collection, but he eventually managed to acquire space, in the Wattfield Bowling Green Club House, to exhibit a portion of his collection! However, not long afterwards, he was granted permission to place a similar portion of his collection, as a display, in the entrance hall of the Carnegie Library, Ayr.

On his retirement in 1925 Alexander published a book called "Tramps Across Watersheds" in which he relates his wanderings across various parts of Scotland and Northern England, and those things which interested him there, including many geological references. To add to the worry and work of publishing this book, he suffered a great shock from his brother's death. Alexander realized he might be on the verge of collapse, and he thought it desperately necessary to find a permanent home for his collection while he still had some strength left. He was eager for future generations to view and enjoy his collection, and so Alexander decided to offer it to the Carnegie Library Trustees but they refused it as it was too large and they had no room.

In 1926 Alexander learned that Ayr Council had just bought a large house with its estate just outside Ayr. Belleisle, as it was called consisted of many large rooms and seemed to be ideal for his purpose. Immediately, Alexander wrote to the Town Clerk to "offer him the first opportunity" to acquire his collection of natural history specimens. He added that he required nothing for the specimens but requested that he should be allowed £250 towards "the out-of-pocket expenses in preserving in dustproof cases and cover glasses his exhibits". The Town Clerk replied (13th Dec. 1926) that the offer had been accepted but that the council had agreed that the collection could only be temporarily stored at Belleisle. However, the council gave Alexander £100 to pay for the services of two joiners as well as the material to allow the

collection to be 'displayed'. Alexander himself was left free to 'display' his collection as he wished, but without payment. When Alexander had almost finished the mammoth task of arranging his collection the council decided to reconsider what should be done with it. They seemed to have three possibilities:- 1) store it, 2) place it in refitted stables at a cost of £300, 3) leave it until the end of the five year lease. They decided the last, and Alexander must have hoped that they would forget about the expiry date so far ahead and leave him and his collection in peace.

Alexander arranged his collection (officially called the Alexander Collection by the Council) with great deliberation as he wanted to ensure that both young and old would be able to gain some knowledge from the exhibits. Alexander had allocated to him eight rooms, all of which appear to have been filled with specimens. Everything was clearly labelled, protected, and entered into a catalogue and a guide book, so that the collection was of no trouble to anyone, except a cleaner and Alexander, who took it upon himself to be a guide for most of the busy periods of the year. He writes, "On Sundays of July and August, during five years, I stood at the top of the stair from 3-5 p.m. and directed two constant streams of visitors - one going up, the other down - who circulated 'all around the eight rooms from left to right'. The beautiful entrance hall, rest room, and catering rooms were equally crowded, whilst pianist and violinist played fine music to all the house." The collection was viewed with great admiration by all - one visitor remarking that "every side of nature was represented there!"

The complete collection consisted of a great variety of objects though Alexander did not collect them all himself; the minerals, for example, were purchased from a London dealer. A visitor to the collection could view, if he possessed the stamina, the following: examples of all types of rock, igneous, metamorphic and sedimentary; a huge display of minerals, both common and rare; gems and precious stones; fossils, including a great many Carboniferous plants from the Scottish coalfields; book upon book of pressed flowers, leaves and ferns; plant seeds in tubes and other botanical curiosities; 2500 recent shells, both British and foreign; 1400 preserved insects; 7 recent sponges; 72 corals; 13 fishes; 25 reptiles; 72 birds' nests: 1100 British birds' eggs; 429 stuffed British birds; 397 stuffed foreign birds; an assortment of stuffed mammals, skulls and horns; articles of archaeological interest, including pottery, bones, glassware, stone axes, 524 coins, an iron cannon-ball, and 16 Chinese weapons. If all this were not enough, the walls of the rooms were covered with maps, pictures and charts depicting: the rulers of Britain; the development of the Solar System; the geology of Britain; all

kinds of plants and animals; the geographical setting of various places around the world; photographs of scientists, warriors, illustrious persons, cathedrals, artists, etc.; as well as a complete pictorial history of the 1st World War from newspaper cuttings and maps!

Apparently the bedrooms of the mansion, in which the collection was housed, suited the collection admirably and had the added attraction of magnificent views from the windows onto the grounds of the house.

This was brought to a sudden end in 1933 when the council lease expired and the council decided that they would not renew it. Consequently, the collection was dismantled in complete disorder, and removed, in eleven van-loads, to the Carnegie Library with the librarian and Burgh Surveyor "taking charge". Alexander did not help at all in the removal as he was not officially invited, and besides, he was ill in bed with a chill. All that had been displayed in eight large rooms was now "dumped" into one room of the library. Some attempt was made by the librarian to arrange some sort of display in the limited space of a small museum in the library but he was not too successful. The collection in general was not well looked after and fell rapidly into disorder, labels became detached, the specimens themselves were rotting, and many items must have disappeared as there was little security. A visitor to the library wrote to the Ayr Post (22nd Aug. 1934) that he was shocked that the collection had been allowed to fall into such a state from its former glory at Belleisle. In a very short space of time Alexander's hard work had gone to waste - his dream of a fine museum to hand down to future generations was not to come true.

In 1935 Alexander published a booklet called 'The Alexander Collection, Ayr' (in which he describes his life and the difficulties encountered with his collection, and which includes a catalogue of the whole collection for when it was arranged in Belleisle) and a revised edition of his 'Tramps Across Watersheds' called 'Across Watersheds' in 1939. It would appear that he never published any scientific papers. Alexander suffered total frustration with his collection once it had been removed to the Carnegie Library apart from an occasional letter of protest to the Ayrshire Post, Ayrshire Advertiser, or the Town Clerk. Alexander died on 31st October, 1940 aged 80 years. He must have been a very disappointed man.

The collection still remains in the cellar of Ayr library. A few visitors have gained access to it. The contents of the boxes have been disturbed and items removed to other establishments without records being kept. Many specimens, however, still wrapped in newspaper dated 1933 appear never to have been unwrapped since they were packed up at Belleisle for removal.

The present state, as one would expect, is of total neglect - specimens, including some beautiful minerals, lie haphazardly in boxes, some broken, some wrapped in newspaper others not, and the majority without labels. Only a few of the stuffed birds remain to gaze dejectedly out from inside their glass cases onto a scene of chaos overlain by a thick layer of black dust!

But all is not yet lost, the present Director of Library Services at Ayr, Mr. Leach, who of course, inherited the collection with his post, has begun work to produce again a small museum in the Carnegie Library and he will be utilizing some of Alexander's Collection to do so. It is very encouraging to know that he has appointed 3 museum staff to help him with this undertaking. However, he has a hard task ahead of him as far as the Alexander Collection is concerned as all the specimens need washing, in some cases repairing, and, most important of all, identifying. Unfortunately, this will be a long job as, with all small museums, there is not enough space available to unpack all the boxes at once and generally sort out the mess. But at least it is gratifying to know that some of Alexander's Collection will again be seen by the general public.

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1939: Across Watersheds. Robert Maclehose and Co. Ltd. Glasgow.

Mrs. Y. Howells,
University of Keele.

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YORKSHIRE MUSEUM, MUSEUM GARDENS, YORK

FOSSIL REPLICAS

We have for sale a wide range of fossil replicas in best quality plaster, produced from fine specimens in the Yorkshire Museum Collections.

A "basic" range is available at the museum sales counter or by post; this includes a young ichthyosaur (head and forelimb, 12½ inches by 10 inches) £5.50p); a jaw of the early Jurassic (Stonesfield Slate) mammal Amphilestes broderipi, £0.40p) (a Type specimen); and a carved "snake" ammonite, Hildoceras bifrons (£1.15p).

We can also supply on request replicas of virtually any fossil in our extensive collections. To quote just one example, we can provide replicas of a Liassic ironstone nodule containing specimens of the very rare primitive crab Eocarcinus praecursor, a fossil "missing link".

A catalogue of our basic range is available on request from the Curator. For information on specific requirements please contact Miss B. J. Pyrah, Keeper of Geology.

A NATIONAL COLLECTION PUT INTO HOSPITAL

In August 1890 the Viceroy of Ireland declared open two fine new buildings in Dublin's Kildare Street, one to accommodate the National Library of Ireland, and the other to house the Museum of Science and Art (now the National Museum of Ireland). The completion of the two buildings gave Dublin a splendid cultural centre, the buildings of the complex taking the form of a letter H with the National Library and the National Gallery being the northern side of the H while the Science and Art Museum and the Natural History Museum made up the southern side. And the cross-piece? That is Leinster House, once the town-house of the Earl of Kildare, but by the 1890s it contained administrative offices for the Science and Art Department and the premises of the Royal Dublin Society. The citizens of Dublin flocked to see their new museum (it was open every day of the year save Christmas Day and Good Friday and for two evenings in every week) and when the Museums Association visited Dublin in 1894 the delegates were clearly impressed both by the range of the museum's collections and by their mode of display.

The museum's geological galleries contained a wealth of material of the greatest interest. In the mineral section there was the famed Leskean collection of 7331 specimens which the Royal Dublin Society had purchased in 1792 at the princely sum of £1350. For many decades before being handed over to the state the collection had been the showpiece of the Society's museum and it had been the subject of a two volume catalogue published as far back as 1798. Among the rocks and fossils were materials assembled by the Ordnance Survey between 1825 and 1843 when the Survey was attempting to produce geological as well as topographical maps of Ireland, and especially noteworthy here were the specimens collected by Joseph Ellison Portlock during the preparation of his classical memoir on the geology of counties Londonderry and Tyrone. Present too were the collection made by Sir Richard John Griffith who in 1839 had published the first detailed geological map of Ireland, and also the materials illustrative of the economic geology of Ireland that had formerly lain in the Museum of Irish Industry founded under Sir Robert Kane in 1845. But most important of all, the new museum contained the material gathered by the Geological Survey of Ireland during the years since its foundation in 1845 - material associated with men such as Thomas Oldham, Joseph Beete Jukes, and Edward Hull. In the 1890s the collection was in good shape; there was a published guide, and there were instructive displays centred upon a huge geologically-coloured relief map of Ireland on the lavish scale of one inch to one mile.

The last member of the general public ever to see the collection in that state left the museum on the evening of Tuesday 27th June 1922. On the following day the government of the new Irish Free State took over Leinster House as a meeting-place for the Dail - the Irish parliament - thereby removing the cross-member from the architectural H and thus destroying all the former cohesion of the museum-library-gallery complex. But for geology there was worse in store. Because of their proximity to Leinster House a large proportion of the geological galleries were requisitioned to provide office space for the Dail's clerical staff. Exhibits were brusquely swept into packing-cases, display cabinets were brutally demolished, and what remained of the geological galleries were declared to be closed indefinitely. Thus did the new state treat one part of the national heritage.

Protest of course followed, but it was all to no avail and for more than half a century the public has been denied access to the national geological collection. Virtually every one of the Annual Reports prepared since 1922 by the museum's Board of Visitors has drawn attention to the disgraceful situation, but all pleas have fallen upon deaf government ears. It would have been nice to have ended our little story on a happier note because since the 1960s the Irish mining boom has generated a renewed Irish interest in the earth-sciences, an interest which might well have been reflected in the activities of the museum. But, alas, quite the reverse has happened. In 1961 the covetous eyes of the space-hungry civil servants of Leinster House fell upon the accommodation still occupied by the long-neglected geological specimens. As a result the dust of forty years was disturbed and the entire geological collection was despatched into store at the former Royal Hospital at Kilmainham lying in Dublin's western suburbs. There the collection still lies untended and forlorn, inaccessible alike to both the general public and the research-bent geologist. So, reader, if maybe you are thinking of visiting Dublin to inspect Leske's minerals, to examine Griffith's type-specimens from the Irish Carboniferous, or to work over Portlock's Londonderry fossils, then for you I have two words of advice. Forget it!

Gordon L. Davies,
Trinity College, Dublin.

A WILD GOOSE CHASE

During research for a new edition of S. S. Buckman's privately printed but standard work on British Jurassic Ammonites called Type Ammonites published 1909-1930, an attempt was made to locate all of the many hundred ammonites figured in it.

For some but surprisingly few, one had to record destruction in the last war. For others such as the elusive Frank Petch collection (see GCG 3, Page 151) we can only record'hot traced and presumed lost". Behind such a mundane statement a lot can be concealed as I hope the following story will demonstrate.

One of the ammonites not traced was a specimen of Dactylioceras tenuicostatum (Young & Bird) from Whitby in Yorkshire. This, I hasten to add not a type specimen, was figured on plate 157 of Buckman's book in 1920 as in Alice, Ladey Fowler's collection at that time. Research in any of the obvious sources (GCG 1, pages 12-16) failed to produce any information and all I could discover was a letter to Sidney Buckman from Lady Fowler dated 1918 when she was a resident in the Royal Hotel, Inverness which did not sound a hopeful place in which to find her collection still preserved.

TheoGetty then came to the rescue by suggesting Burke's Peerage as an obvious source of information about the family and incidentally one very useful on other occasions with Burke's other works on Landed Gentry etc. This produced the information that Alice Lady Fowler was the wife of the eldest son of John Fowler 1st Bart. born 1817, who was the engineer in charge of the Forth Bridge and whose father came from Yorkshire, which perhaps explained a Whitby ammonite. Burke also recorded that Alice Lady Fowler's brother-in-law's second wife was still alive. A letter to her brought back a very speedy and kind reply saying that she had no knowledge of the collection but that one of Lady Fowler's children had a husband still alive who might help.

More hunting in reference books and old telephone directories (very useful books. I can never understand why people throw them out with such alacrity.) produced an address for him. Another letter produced a reply expressing great interest and a confirmation that the collection had existed in the family mansion in Rosshire and that the writer well remembered them in a particular room before the First World War. Thus was confirmation that the collection existed and would be worth following up.

My kind informant was also able to tell me something of the history of the house which had sheltered the collection. After passing through the

ownership of various members of the family the estate was sold in 1930 to a family who live in the neighbourhood today. The mansion however became too large and expensive to run and was handed over to the Youth Hostel Association for use as a hostel. Sadly the depredations of time had taken their toll and the house could not be used for its intended purpose. It had then to be demolished. Certainly the collection of fossils had remained in the house after it was sold by the Fowler Family but no one seemed to be sure if the demolition had happened with the fossils in situ inside.

Another letter to the survivor of the family who purchased the house from the Fowler family in 1930 produced another kind reply and more recollection of the Museum room in the mansion. It was moreover not left in the house when this was demolished but taken out and given to a local Museum. The name of the actual Museum was not known for sure but enquiries in the area very kindly carried out for me suggested Dingwall in Ross and Cromarty was the most likely final resting place.

As far as I could tell Dingwall did not have a Museum but, undaunted, I wrote to the Town Clerk of Dingwall who confirmed that the town had had a Museum but that in the last war the Army had requisitioned the building so all the exhibits were carefully boxed and stored. Sadly the store caught fire and everything was lost. But luckily some of the geological specimens had proved so heavy that the geological specimens never got as far as the store but remained in a large box in the Town Hall. But the catalogues were lighter and did get to the building which caught fire! So the only way to discover if Lady Fowler's ammonite survived was to visit.

Thus it was that after a field trip to the Isle of Skye somewhile ago I found myself hitching north to Dingwall instead of accepting a comfortable lift south. On arrival at Dingwall I was taken as prearranged to look at the remains of the collection. These were then lying on the floor of a disused projection room in the upper floor of the Town Hall. It was a sad sight but one could instantly recognise some Upper Lias ammonites and other fossils which were in typical Whitby lithology. In other words obvious bed fellows of the original figured specimen. But no sign of the specimen itself. None the less I could be sure I had found its last resting place and could pay my last respects. It had been a fascinating treasure hunt made possible by the many kind people who had answered my queries. But I think Samuel Johnson summed it up quite well: "Worth seeing? Yes. But not worth going to see". I agreed with him as I spent the next ten hours hitching back to Stoke-on-Trent.

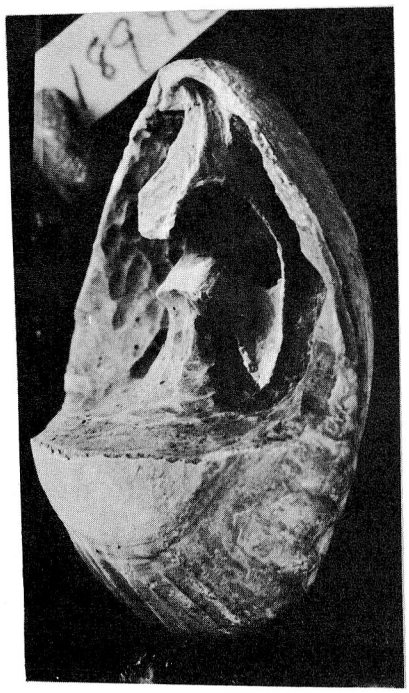
H. S. Torrens,
University of Keele.

MUTUAL AID

Hugh Torrens has received the following request for specimens from Emeritus Curator G. Arthur Cooper of the National Museum of Natural History: Smithsonian Institution, Washington, D.C. 20560.

It is published in the hope that other G.C.G. members will also be able to assist Arthur Cooper in his important work.

"For some time I have developed skepticism of the internal restorations of some Jurassic brachiopods based on serial sections. Some of them just did not look right so I decided to see if I could expose the actual loop. An example of my efforts is shown below that may be compared with restorations in the Treatise (1965).



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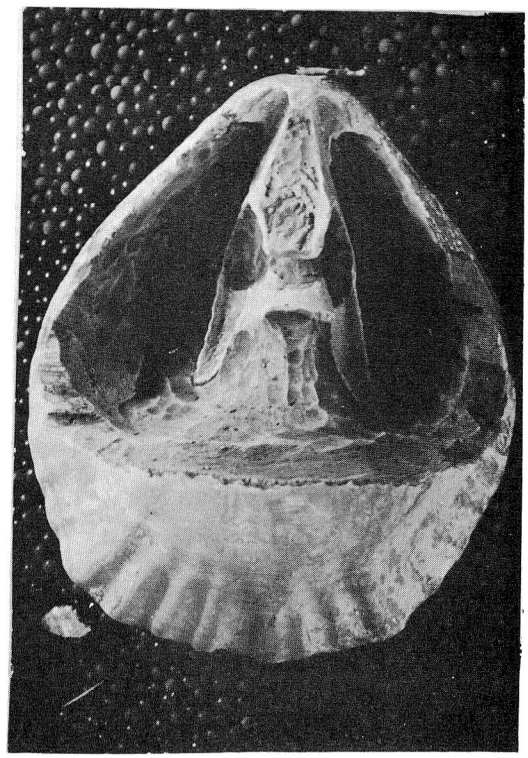


Plectoidothyris polyplecta (Buck.) Oolite Marl, Nr. Notgrove, Glos.

With a moderately soft matrix a loop can be exposed in 2 to 3 hours. The harder the matrix the longer the time. Some specimens cannot be dissected at all, but enough of them can be cleaned of matrix to make the exercise worth while. There are hazards, but these are the same as one encounters with serial sectioning. This involves the selection of the right specimen; some specimens have broken loops inside. This happens with serial sectioning too as shown by the large number of published sections that do not show a complete loop. See the Treatise again in which some of the sections give virtually no information.

I am anxious to obtain specimens of some of Buckman's genera. I have been successful with some of them but our collection here has little depth in the representation of Mesozoic fossils. I have exhausted all my possibilities. Some of the species that I will beg from you have been cleaned and I have all elements of the loop except the transverse band. This is the most difficult part of the cleaning operation.

I have appended a list of about 15 species that I would be grateful if you could spare at least 3 specimens. I say 3 as this gives some latitude for failure and will leave one over for reference."

G. Arthur Cooper,
Paleobiologist Emeritus.

List of Jurassic terebratuloids

Charltonithyris uptoni Buckman

Euidothyris euides Buckman

Goniothyris craneae (Davidson)

Loboidothyris latovalis Buckman

Lophrothyris lophus Buckman

Ptychtothyris stephani (Davidson)

Rugithyris subomalogaster Buckman

Stiphrothyris tumida (Davidson)

Stroudithyris pisolithica Buckman

Tubithyris wrighti (Davidson)

Tegulithyris bentleyi (Morris-Davidson)

Epithyris maxillata (Sowerby)

Terebratula eudesi Oppel - If you can possibly spare them I would like to have the larger specimens such as those from Dundry Hill, near Bristol and from Corton Denham, Sherborne, Dorset. These two have different hinge plates but I have been unable to get the transverse ribbon.

A similar situation exists with specimens labelled T. eudesi from Bradford Abbas. These are much smaller than the preceding and two genera seem to be involved. One is pale yellow and with soft matrix. The other is darker and not so strongly folded anteriorly. I would be grateful for some of this small beasty.

Weldonithyris weldonensis Muir-Wood

TECHNICAL

THE USE OF BENZENE IN LABORATORIES

We should like to expand more forcibly Aspen's comments (GCG No. 4, p. 90) on the use of benzene in conservation and warn of the toxicity of other solvents that are apprently frequently used.

Benzene is one of the most toxic of solvents and its use in conservation should be severely restricted. It is a known cause of fatal aplastic anaemia (sometimes after minimal contact) and is a possible cause of leukaemia with chromosome damage. Poisoning may occur by absorption through the skin or by inhalation of the vapour. The Threshold Limit Value* (T.L.V.) of benzene is only 10 p.p.m., that is, if you can smell it the concentration is greater than 10 p.p.m. Toluene (T.L.V. 200 p.p.m.) is a good substitute but only General Purpose Reagent Grade or better should be used as benzene may be a major contaminant in the cheaper grades. Xylene should not be substituted as the T.L.V. is only 100 p.p.m.

Chloroform and carbon tetrachloride (T.L.V. 25 p.p.m. and 10 p.p.m. respectively) should never be used in conservation laboratories, chloroform being an acute liver poison while carbon tetrachloride affects the nervous system and poisons the renal and cardiovascular areas. Both are probable carcinogens. Dichloromethane (T.L.V. 500 p.p.m.) is much safer and has similar solvent properties as does 1, 1, 1-Trichloroethane (T.L.V. 350 p.p.m.) substituted for carbon tetrachloride.

All organic solvents must be assumed toxic either by skin absorption or vapour inhalation therefore adequate steps must be taken to reduce risks. Programs requiring the use of even small quantities of solvents should be carried out in a fume cupboard or in conjunction with an efficient extract system.

It must be remembered that from the Health and Safety at Work Act 1974, it is the legal duty of employers to make:-

> "arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and trannport of articles and substances".
> [(Section 2 (2) (b)].

Similarly of employees:-

> "it shall be the duty of every employee while at work to take reasonable care for the health and safety to himself and of other persons who may be affected by his acts or omissions at work".

The references cited are readily available and every laboratory using chemicals should possess the first mentioned.

1. Hazards in the Chemical Laboratory. G.D. Muir ed. Royal Institute of Chemistry 1971.

2. Safety Measures in Chemical Laboratories. H.M.S.O.

3. Merck Index. An encyclopedia of chemicals and drugs. Merck & Co., New Jersey, U.S.A. 1968.

4. Laboratory News. 'Laboratory atmospheres. F. Dewhurst' No. 103, p. 11, 1975.

5. International Institute of Conservation. Toxic Chemical Substances by P. Lesley Bidstrup. Meeting held on 27th January 1972.

*Threshold Limit Value is the time weighted average concentration of a toxin in air above which level it is dangerous.

F. M. P. Howie,
P. J. Whybrow,

Dept. of Palaeontology Laboratory,
British Museum (Natural History),
London, S.W.7.

CORRESPONDENCE

Comment on Alginate Impression Compound

After reading the report on Alginate Dental Impression Compound by J. W. Stanley in G.C.G. No. 4, I tried the technique out on a few trilobite specimens, both large and small. I found that the Alginate Compound worked extremely well on specimens that possessed no fine detail producing moulds good enough to allow up to ten casts to be taken off each one.

However, on specimens which possessed fine detail such as furrows and tubercles, which abound on trilobites, I discovered that bubbles occurred occasionally if the alginate compound was too dry; but, because the alginate compound is so quick setting, it took no time at all to make a second mould if I found that bubbles had formed. There is a limit though to how 'wet' the alginate compound can be allowed to become when trying to produce bubble-free moulds from highly intricate specimens. If the alginate compound is too wet a delicate 'furry' texture is produced on the mould which is then reflected in the casts. Only through experimentation can one learn how wet or dry the alginate compound needs to be and what detail can be reproduced.

I took a few moulds off museum specimens, that I had in my possession at the time, and I found, to my relief, that the specimens suffered no damage at all. This is advantageous to me as I frequently borrow specimens from museums which can only be loaned for a short time. The alginate compound enables a satisfactory replica to be produced in a very short time and the original returned, at once, if necessary. If a specimen can only be viewed in a museum then a mould can be taken off the specimen within minutes with very little fuss and a replica cast on returning to one's own department laboratory.

May I also add that a short article appeared in the Journal of Palaeontology, 1975, Vol. 49, No. 4, p. 767 called 'The Use of Dental Impression Material for Moulding Macrofossils' by P. G. Quilty and A. J. Williams. The paper outlines how to produce moulds from two dental alginate compounds produced in Germany - the first compound produces an initial rough mould and a second compound, which enables fine detail to be reproduced, is then impressed between the specimen and the first rough mould. The authors point out that often the first rough mould is good enough for palaeontological purposes. Both compounds need the addition of a hardener and the setting time for both is 1-3 minutes.

The advantages of the compounds are discussed by the authors and are identical with those suggested by J. W. Stanley in his article.

Mrs. Y. Howells,
Department of Geology, University of Keele,
Keele, Staffs. ST5 5BG.

* * * * *

GEOLOGICAL INFORMATION RESOURCES IN THE BRITISH ISLES

The Information Group of the Geological Society of London are in the process of gathering information for a Directory of Geological Information Resources in the British Isles. Geology is interpreted to include regional geology, stratigraphy, palaeontology, mineralogy, petrology, geochemistry, crystallography, structural geology, applied geology, mining, geophysics, hydrology, glaciology, oceanography, geomorphology, soil science, history of geology.

Information is deemed to include organisations which will answer enquiries in the area of science together with those who have collections, or part of their collections of printed material devoted to geology. It is intended to include associations, societies, government organisations, academic institutions, industrial and commercial establishments, museums, publishers and libraries of all types.

The survey will not cover collections of specimens.

For further information please contact:- Mrs. Judith Diment, Palaeontology Library, British Museum (Natural History), Cromwell Road, London SW7 5BD.

* * * * * *

THE ROYAL SCOTTISH MUSEUM, THE MALACOLOGICAL SOCIETY OF LONDON, AND THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

A Symposium on "Sea-Slugs and Land-Slugs"

will be held at the Royal Scottish Museum, Edinburgh, on Friday and Saturday, 26th/27th March 1976. Papers to be presented will deal with current work on various topics relating particularly to slugs, both marine and non-marine, and each session will be followed by open discussion of a more general nature. Abstracts of papers read will be published in the Proceedings of the Malacological Society of London.

The Symposium will be preceded by a "CURATORS' COLLOQUIUM" on Thursday, 25th March, at which any persons involved with the care of a large collection of Mollusca, whether public or private, will be welcome. Subjects for discussion are invited from all participants.

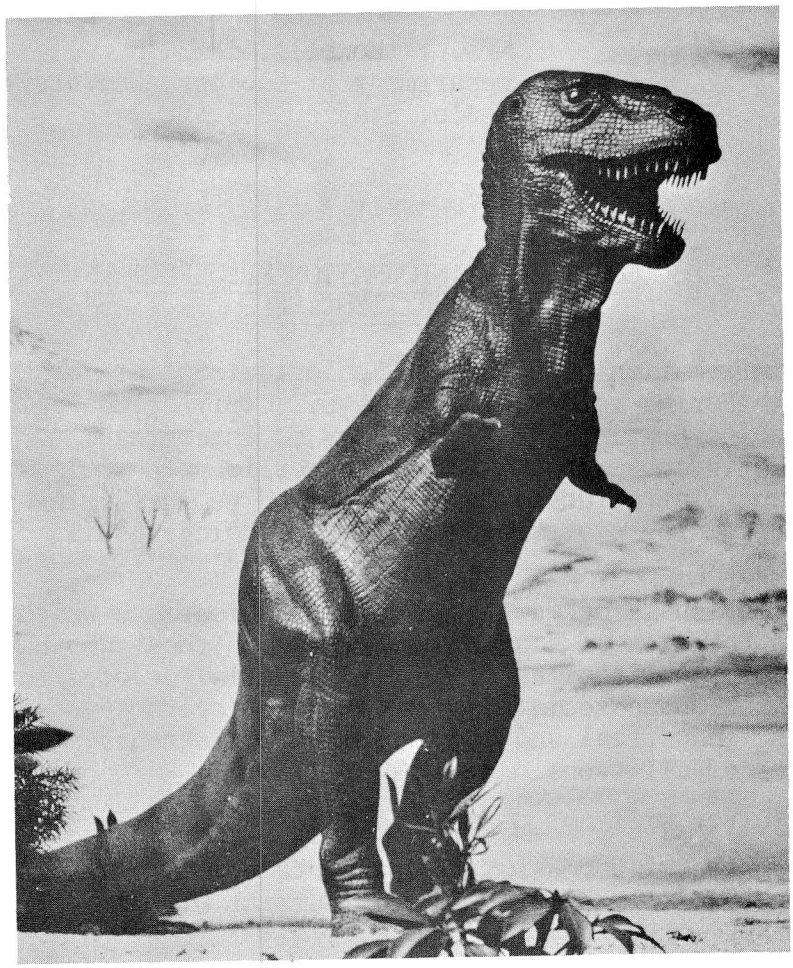
An Excursion will be arranged to a locality of slug interest, subject to sufficient demand and weather conditions permitting, on Sunday, 28th March.

Accommodation will be arranged at the University of Edinburgh, Pollock Halls of Residence, an open park-land site with easy access to the museum, from the evening of 24th March until the afternoon of 28th March.

Interested persons should contact David Heppell, Slug Symposium, The Royal Scottish Museum, Chambers Street, Edinburgh EH1 1JF as soon as possible.

* * * * * *

Dinosaurs by Saftvale



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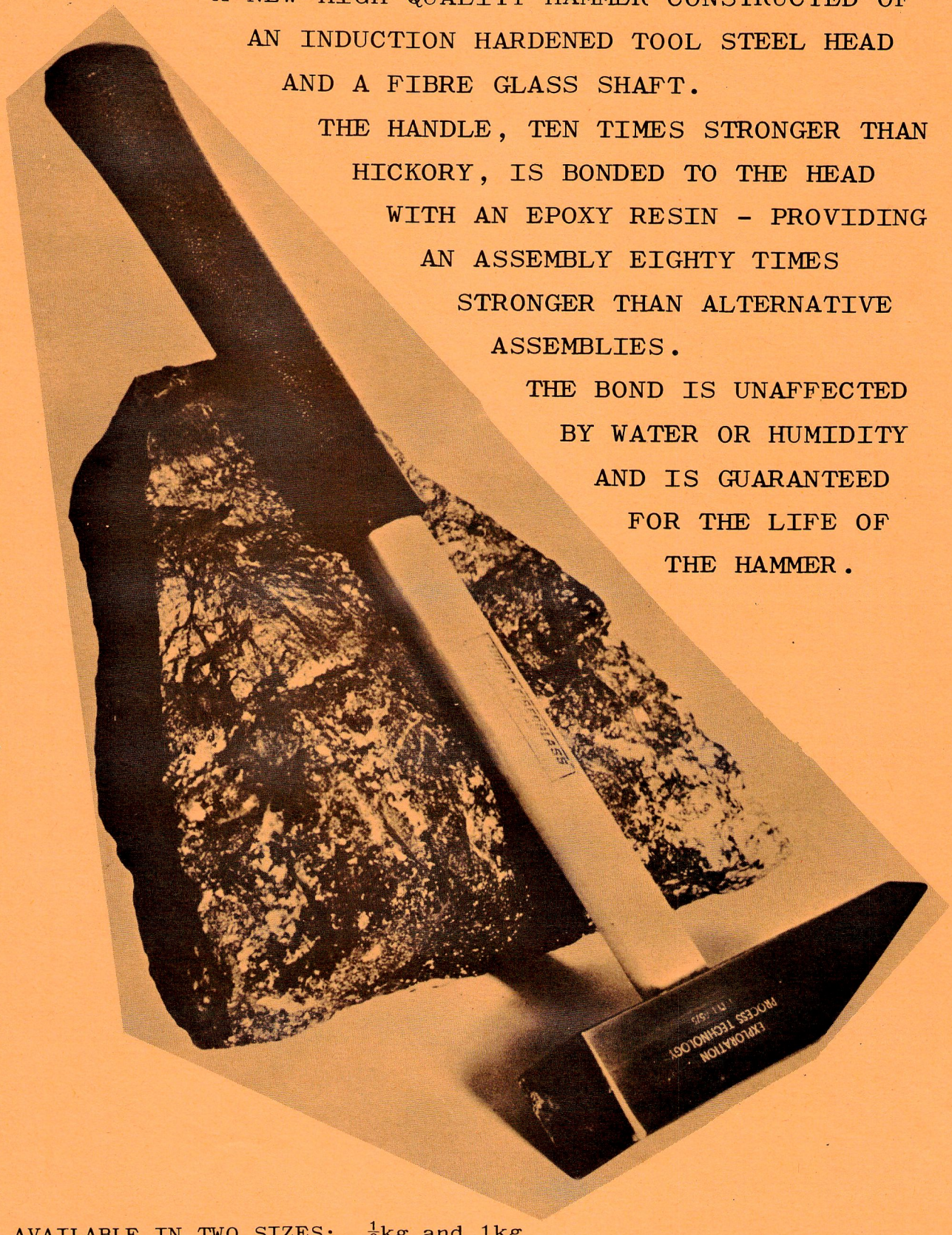

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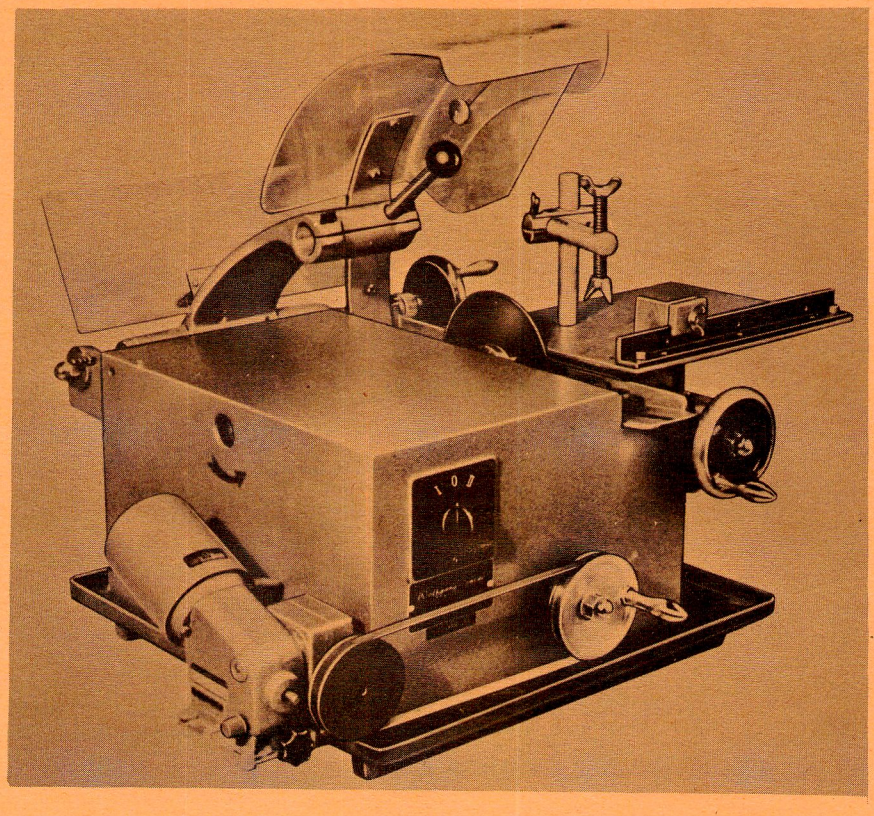

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