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DE LA CÉRAMIQUE ÉGYPTIENNE

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I

CLASSEMENT GÉOGRAPHIQUE DES DÉCOUVERTES

§ 1. — *Abu Mina* (Grabung des Deutschen Archäologischen Instituts, Kairo).

Die beiden letzten Kampagnen (März-April 1980 sowie April-Mai 1981) förderten vor allem umfangreiche Scherben-Komplexe aus der Periode der großen Zerstörung des Pilgerzentrums zutage, die vielleicht durch die persische Eroberung des Landes (619 A.D.) verursacht wurde. Eine quellenmäßige Bestätigung war bisher allerdings nicht zu finden. Der Zerstörungsschutt der Hauptbauten wurde damals in dem zentralen Pilgerhof deponiert, um Platz für den Neubau der Gruftkirche (fünfschiffige Basilika) zu gewinnen, deren Bauzeit auf Grund der Keramikauswertung neuerdings in die Zeit des Patriarchen Michael I. (744-768 A.D.) angesetzt wird.

Grabungen im Bereich der Gruftkirche selbst erbrachten Keramikmaterial der 1. Hälfte bzw. der Mitte des 5. Jhs. In einem Baukomplex östlich des Pilgerzentrums wurde in den frühesten Schichten sogar frühkaiserzeitliche Keramik angetroffen. Die oberen Schichten führten Material des 6. Jhs. A.D.

Die Auswertung der Keramik liegt nach wie vor in Händen von J. Engemann (Bonn) und seiner Mitarbeiterin Elke Pflugradt.

P. Grossmann

§ 2. — *Kellia*, Kôm 167 (Campagne 1981, IFAO).

La céramique du Kôm 167, dégagé en 1981, présente, malgré son état de conservation extrêmement fragmentaire, un échantillonnage de formes et de techniques de fabrication, que l'on peut comparer à celui de la céramique des fouilles suisses (M. Egloff).

Le contexte archéologique, en effet, qui se résume essentiellement en remplissage des pièces de l'ermitage, dû entre autres à l'effondrement des voûtes, rend difficile une appréciation chronologique et évolutive de la céramique du Kôm 167. Les seuls exemplaires intacts qui nous sont parvenus (amphores) étaient encastrés dans l'épaisseur des murs.

Reste la possibilité d'établir, pour cette céramique fragmentaire, des statistiques et des proportions pour des groupes définis : les récipients culinaires, montrant des traces de feu sur l'extérieur des parois, sont les plus nombreux, suivis de fragments d'amphores et de sigillée. Pour ces trois groupes, on distingue des divisions internes quant à la forme et au type de pâte remarquables par leur richesse et leur variété. On observe quelques tessons d'objets dits « à usage liturgique » (coupes à encens, lampes), dont le marli est décoré de motifs géométriques peints; des fragments de gargoulettes, peints eux aussi et à la mince paroi poreuse, ont été identifiés.

La datation de cette céramique n'offre pas une fourchette chronologique très précise : entre la fin du IV^e siècle et le VIII^e siècle, d'après les premiers résultats.

La question de la fabrication de cette céramique reste posée : vu la variété des formes et l'emploi relativement répandu de la céramique tant pour l'ensemble des Kellia que pour le Kôm 167, il semble que l'hypothèse d'un ou de plusieurs ateliers de potiers localisés en Egypte et peut-être dans une zone proche de l'implantation kelliote (Alexandrie?) doive être envisagée.

Pascale Ballet, Paris

§ 3. — *Naukratis - Pottery types from the 1980-81 excavations (Universities of Minnesota and Missouri).*

Although a few morphologically non-diagnostic, imported black-glazed sherds were found during the excavations, the vast percentage

of the ceramic material is from plainer wares, the majority of relatively local production. We present this pottery divided into ten fabric « types », with the understanding that the differences may not always be intentional. The plain wares can be divided into two sub-groups : those predominantly tempered with mineral inclusions, and those tempered with organic matter.

Type I — Plain Mineral-tempered Red Ware — It is comprised of a well levigated clay which in its basic version is unslipped. Temper consists of finely ground white, grey and red grit with white predominant. « Micaceous » inclusions of similar size are also frequent. The vessels are wheel-made with deep finger corrugation frequently visible on the interior of the vessel, while the exteriors of many vessels are scored by the potter's fingernails.

Type IA — With a Red Slip.

Type IB — With an « Orange » Slip.

Type IC — With White Painted Decoration.

Type II — Plain Mineral-tempered Brown Ware — This fabric must be considered as a firing (?) variant of the main Type I, being similar in the method of manufacture, and the type and size of the inclusions. It differs however, in the color of its core which is sometimes grey, often red, but most frequently yellowish-red.

Type IIA — With a Brown Slip.

Type IIB — With an « Orange » Slip.

Type IIC — Mottled as a result of Primary Firing.

Type IID — Black fired.

Type III — Cooking Pot Ware — The cooking pots have been fashioned from a fabric that bears close similarities to the red mineral-tempered ware to which it must be directly related. They exhibit

grey to black discoloration on the lower portions of the body that would be in close proximity to the heat of a secondary fire.

Type III A — Variant closely resembling Type I ware but more completely levigated and fired to a hardness paralleled only by the cooking pots.

Type IV — Chaff tempered Pink Ware — The clay is poorly levigated and mineral inclusions are in a minority. The major tempering agent was straw and chaff both of which are used in large quantities. The interior and exterior surfaces of all examples have been heavily coated with a thick slip that ranges from light reddish brown to pale red.

Type IV A — Chaff-tempered Brown Ware.

Type IV B — Chaff-tempered Mottled Ware.

Type IV C — Chaff-tempered Red Ware.

Type IV D — Chaff-tempered Black Ware.

Type IV E — Chaff-tempered Painted Ware.

Type VA — Smooth Slipped Coarse Ware — Morphologically, this type consists basically of low, thick-walled bowls, or platters. The fabric is poorly levigated and the large chaff temper often appears in clumps in the thick grey and/or weak red sections. The interior and exterior surfaces have been covered with a thick slip which generally presents a much better appearance than that of the chaff-tempered wares, and recalls the slips of the mineral-tempered vessels.

Type VB — Coarse Ware — Consists of the truly coarse vessels having thick walls and simple shapes. Large pieces of chaff to 1.50 cm in length and up to 3 mm in diameter are frequent in the poorly levigated fabric. Thick grey cores are common.

Type VI — Amphorae — The most common amphora type has a long neck, and slightly outsplayed rim. The fabric is moderately well-levigated, containing mineral temper similar to, but larger than that of Type I. The thin cores range from grey to brown. Traces of a very thin slip appear on the exterior.

Type VIA — Amphora with Pink Paint Interior — The fabric is brown and the well levigated clay shows only sand-sized white grit and micaceous inclusions. The exterior has been covered with a pink to reddish yellow paint which was carried over the rim to form a horizontal band c. 3 cm wide on the interior.

Type VII — Red Burnished, Drip-painted Ware — Three sherds have a red paint applied in drips on their exterior surfaces. The fabric, temper and color of these fragments are all similar to Type II A, with which they are probably to be grouped.

Type VIII — Red Slipped Closely-burnished Ware — Rare.

Type IX — White Smooth-slipped Ware — A moderately well levigated fabric containing white and grey grit temper. Fine straw casts can be present. This ware is considered to be an import perhaps of East Greek origin.

Type IXA — White Gritty-slipped Ware — Characterized by a white, slightly gritty slip. The clay is well-levigated and tempered with sand-sized white grit and fine straw. Firing and color vary.

Type IXB — White-slipped Coarse Ware — Sherds from amphorae of a shape differing from those of Type VI. The fabric is well levigated with fine white grits. Considered to be an import possibly like IX.

Type X — Pink Slipped Ware — A well levigated fabric with fine white, grey and occasionally red temper. There is always a thick pink slip.

William D.E. Coulson

Albert Leonard, Jr.

§ 4. — *Mendes 1981* (Excavations of the Institute of Fine Arts — New York University).

The disappearance of possibilities for funding in the foreseeable future has dictated an end to the IFA-NYU excavations at Mendes; 1981 was the last season for the expedition. Work involved reviewing the pottery from the previous seasons (1964-1980) to ensure continuity in the data before preparing it for publication. Material for the final publication will include the Third Intermediate and Late Period pottery previously mentionned in *Bulletin de Liaison* V, as well as Late Period material from the temple area, Third Intermediate and First Intermediate Period pottery from houses outside and below the temple, late 6th Dynasty material from a cemetery below the temple, a small amount of Archaic pottery from a deep sounding below the mastabas, and Ptolemaic and later material from the areas outside the enclosure wall and from Kom el-Adam and Tell Thmuis.

A preliminary report on the work of the 7th and 8th seasons is now in press (Undena) and will appear early in 1982.

Susan J. Allen

§ 5. — *Tell el Retaba 1981* (Johns Hopkins University).

Work at Retaba in 1981 was confined to a salvage operation in connection with an irrigation pipeline being constructed in a north-south direction through the center of the mound. Since this 7 meter

wide trench was about to be refilled, work consisted of drawing the profiles exposed and recovering any pottery and objects. Pottery included a number of 19th Dynasty jar burials of infants, which often contained shallow bowls, and a pottery coffin burial of an adult, probably from the Third Intermediate Period. Though the trench reached to a depth of five meters, no material earlier than the New Kingdom was recovered.

Michael J. Fuller

§ 6. — *Tell Atrib* (Polish Center of Mediterranean Archaeology and the Coptic Committee).

After a pause lasting ten years, archaeological work at Kom Sidi Jussuf in Tell Atrib (by Benha) was resumed in 1979 (September-October) and continued in 1980 (October-November). These excavations are organized by the Polish Center of Mediterranean Archaeology of Warsaw University in Cairo, together with the Coptic Committee represented by Professor Pahor Labib. The work is directed by Dr. Barbara Ruszczyc from the National Museum, Warsaw.

The exploration of the northern part of the Kom has brought to light a vast field of debris which contains many fragments of marble architectural elements. They probably originate from a destroyed church and can be dated approximately to the 4th-5th centuries A.D.

Furthermore, a large quantity of Late Roman pottery fragments were found belonging mainly to the Late Roman B group. Even more numerous are two other groups of pottery representing local Egyptian wares, likewise classified as Late Roman. One of them is characterized by an orange clay colour, the other by a brown and carmine clay. A characteristic feature of the latter variety is a slightly lustrous surface.

Painted Coptic pottery, decorated with geometrical and floral motifs, constitutes another large group. There are fragments of household vessels (amphorae) and water flasks, as well as plates and bowls. Many of the latter bear representations of animal figures such as fishes, birds and camels. Human figures occur on some vessels, as for instance : the figure of a saint whose head is surrounded by a nimbus, standing between two other human figures. This whole group of painted pottery can be dated to the 5th-8th centuries A.D.

The Coptic pottery with coloured glaze is represented by only a few specimens : small bowls painted dark green and yellow, or green and light brown.

In the upper part of the Kom fragments of terra sigillata and of mediaeval Islamic pottery have been found.

Tomasz Górecki

§ 7. — *North Saqqara* (Egypt Exploration Society, 1980-1981).

Short study seasons were held in the autumn of 1980 and the autumn of 1981 on the pottery from the excavations in the Anubieion. Firmly stratified pottery from deposits dated by coin evidence is available for almost the whole of the Ptolemaic period, and the sequence extends into the first century A.D. There is also a smaller amount of pottery from the late Roman period. Clear lines of development are evident and the pottery of the late Ptolemaic and early Roman levels is markedly different from that of the earlier Ptolemaic. In general, lighter coloured, well-made vessels have given way to, or developed into, heavier, cruder red-surfaced or purple-surfaced forms. A great deal more study is required but there is every reason to hope that pottery of this period from the area of Memphis will eventually be datable within fairly close limits.

Peter French

§ 8. — *Saqqara-Jeremiaskloster* (Grabung des Deutschen Archäologischen Instituts, Kairo).

Der größte Teil, der in den neuen Untersuchungen angetroffenen Keramik, gehört erst dem 7. Jh. bzw. vor allem der Zeit nach der arabischen Eroberung an, als das Kloster in seine Hauptblüte eintrat. Frühere Funde führen bis in die Mitte des 6. Jhs. hinauf, um welche Zeit der Vorgängerbau der Hauptkirche und das im Herbst 1979 gefundene Refektorium anzusetzen sind. Die Auswertung der Keramik liegt in den Händen von Elke Pflugradt.

P. Grossmann

§ 9. — *Saqqara* (Excavations of the Egypt Exploration Society and the National Museum of Antiquities at Leiden, January-March 1981).

Excavations immediately to the west of the tomb of Horemheb revealed a group of small Ramesside tomb chapels. The southern magazine of one of these, that of *P3-Sr*, yielded a closed pottery group of the nineteenth dynasty. In addition a large cache of New Kingdom material was found deposited in the forecourt of this tomb immediately behind Chapel E of Horemheb. Three separate caches of Late Period pottery were also found elsewhere within the area of the present excavations. The study of these groups, together with the pottery from the burial chambers will continue next season.

Dave Aston

§ 10. — *Saqqarah*, Temple haut de Pépi I^{er} (Mission Archéologique Française).

La Mission Archéologique Française de Saqqarah (mission en Egypte de l'URA n° 4 du Centre de Recherches Archéologiques du

CNRS), dirigée par J. Leclant, a, du 13 Décembre 1980 au 31 Mars 1981, poursuivi ses travaux.

Dans le temple haut de Pépi I^e, les dégagements ont été menés dans le secteur au Sud du temple, en particulier sur l'emplacement des vestiges du magasin XII' et XIII' et du long couloir F'. Des fragments de poterie ont été recueillis.

A Abouab el-Qotat, dans la falaise du Bubastieion, à proximité immédiate de la maison de la mission, A.-P. Zivie a entamé le dégagement de la tombe de Aper-el, vizir du Nouvel Empire (entre le règne d'Aménophis III et celui d'Horemheb). Le nettoyage de la zone d'entrée a amené au jour de nombreux tessons de toutes les époques, dénués de signification archéologique. La sépulture elle-même a été bouleversée par les pillages et les incendies; on a retrouvé cependant des vases et des coupes intacts ainsi que des tessons peints caractéristiques de la seconde moitié de la XVIII^e dynastie ou légèrement postérieurs. Le contenu plus ou moins bien conservé (pigment bleu par exemple) de certains vases sera soumis à analyse.

J. Leclant

§ 11. — *Fayoum*, Secteur nord-ouest (Fouilles de l'Université de Pise, 1981).

Il n'y a pas eu cette année une fouille sur le site de Kom Madi. Mais l'Université de Pise, sous la direction de Mme. Edda Bresciani, a exécuté, pendant le mois de janvier, un « survey » — selon les accords passés avec le Service des Antiquités — dans le secteur nord-ouest du Fayoum, en suivant le bord des cultures. Les sites de Kom el Khamsin (où ont été trouvées des pièces intactes : des coupes et un petit Harpocrate en terre cuite), de Medinet el-Nahas et de Kom Daniel, ont fourni une grande quantité de fragments de poterie, de faïence et de verre recueillis en surface et datés de l'époque ptolémaïque

jusqu'à l'époque romaine. Tous les renseignements sur ce matériel ont été mis sur fiches et l'ensemble des fiches, accompagné de photos, constitue une intéressante documentation sur ces sites.

Cristina Guidotti

§ 12. — *Tell el-Amarna* (Egypt Exploration Society).

The excavations to the south of the Workmen's Village at Tell el-Amarna continue to produce large numbers of sherds from stratified deposits, almost all, as one would expect, of 18th dynasty date, but including a few of the Late Period lying below the collapsed village wall. The sherds are unusually small and worn, often making classification of anything other than fabric impossible. Very few complete forms were recovered.

Recording takes place in 2 stages; an initial sorting and counting on site, followed by more detailed classification of diagnostic forms by fabric, surface treatment, and shape, and where possible, the sherds are related to forms or groups of forms published in the « City of Akhenaten » corpus. The majority of vessels represented in the excavations are red-slipped silt-ware bowls, but blue-painted sherds, amphorae and imported amphorae also occur.

The nature of the ceramic material does not permit the drawing-up of any new repertoire of forms, but it is hoped that statistical analysis of the data will help in the attribution of function to areas under excavation, and also enable differences in the assemblages from the stratified sequence to be distinguished.

Pamela Rose

§ 13. — *Abydos* (University of Pennsylvania).

This season focused on a study of the ceramic sequence from excavations in the Kom es-Sultan in 1979. The material represents

stratified domestic assemblages ranging from the Late Archaic to the First Intermediate Period.

David O'Connor

Peter Lacovara

§ 14. — *Abydos* (Grabungen des Deutschen Archäologischen Instituts, Kairo).

1. *Umm el-Qaab.*

Bei den Nachuntersuchungen im B - Friedhof der frühzeitlichen Königsnekropole wurden in den Kammern B 19 (Horus Aha) und B 1/2 (Horus Ro) sowie im Gelände verstreut u.a. eine Anzahl zumeist fragmentarischer Pithoi mit Schnurring- oder Wellenverzierung sowie große Mengen an Scherben von zylindrischen Gefäßen (Höhe ca. 25 cm, ø 9-10 cm) mit eingeritztem Zierring in Wellen- oder Schnurform geborgen. Neben der Analyse von Resten der Gefäßinhalte bietet insbesondere die Gruppe der Zylindergefäße, die sich zum Teil aufgrund von noch erhaltenen Tintenaufschriften Horus Ka und seinem Vorgänger Horus Ro zuweisen lassen, eine Grundlage für eine genauere Untersuchung dieses Gefäßtyps in spätvordynastischer Zeit.

2. *Abydos-Süd (Sinki).*

An der kleinen, in die 3. Dynastie zu datierenden Stufenpyramide von Sinki (6 km südlich von Abydos) wurde in einer Schicht mit Feuerstellen und Tierkot, die offenbar auf die zeitweilige Anwesenheit von Hirten zurückgeht, nubische Keramik aus der Zeit des Alten Reiches gefunden. Typen ähnlich Nordström, *Kush XIV*, S. 66, fig. I, Nr. 11-14.

G. Dreyer

§ 15. — *Karnak East* (University of Toronto).

In December 1980 a study season was held on the ceramic material recovered from the excavations of the University of Toronto at East Karnak. Assemblages from stratified Late Period deposits, and from the settlement underlying the New Kingdom levels, were examined. Progress was made towards the development of a chronological sequence of forms of the Late Period, and a typology of vessels from the earlier deposits was drawn up. Study of the pottery will continue during future seasons.

Pamela Rose and Peter French

§ 16. — *Qurna*, Tempel Sethos I (Deutsches Archäologisches Institut, Kairo).

Im Frühjahr 1981 wurde eine weitere Aufarbeitungskampagne zur Vorbereitung der Publikation der Keramik durch geführt.

Im Mittelpunkt der Bearbeitung standen weiterhin die koptische bemalte Keramik und die spätromische Haushaltsware sowie die umfangreichen Funde an spätzeitlichen Balsamierungsgefäßen aus den Topfnesten der Tempelumfassungsmauer.

K. Myśliwiec
P. Barthelmess
B. Engelmann

§ 17. — *Qourna*, Temple funéraire de Thoutmosis IV (Fouilles de l'Université de Pise, 1981).

Sous la direction de Mme. Edda Bresciani, l'Université de Pise a travaillé en février dans la zone au sud du temple funéraire de Thoutmosis IV. La fouille du deuxième édifice qui se trouve à l'extérieur

de l'enceinte du temple de ce côté a été terminée : il s'agit d'une chapelle de culte qui a de nouveau livré de la poterie du Nouvel Empire, postérieure au règne d'Aménophis III. Au sud de cette chapelle, on a trouvé cette année une nouvelle tombe du Moyen Empire, une tombe très pauvre qui abritait le squelette d'un enfant et de deux petites filles. Près du sarcophage de l'enfant a été trouvé *in situ* un petit vase d'une forme typique du Moyen Empire. Mais la cour ainsi que des parties de l'intérieur du tombeau étaient complètement remplies de poteries, en état plus ou moins fragmentaire, parmi lesquelles beaucoup étaient peintes. Cette impressionnante quantité de céramique date certainement de l'époque de Thoutmosis IV, car le tombeau avait été rempli pendant le nettoyage du temple de ce roi, après la fin de sa construction. On a pu étudier cette année seulement un petit nombre des pièces décorées, soit inscrites avec des « graffiti », soit peintes (surtout en bleu, rouge et noir). L'étude de la grande quantité de poterie qui reste a été renvoyée à la prochaine campagne.

Cristina Guidotti

§ 18. — *Tomb 33 at Thebes.*

I have obtained permission to enter the storeroom of tomb 33 at Thebes to complement my report on the pottery from the tomb of Tutankhamun, delivered to John Harris earlier this year.

Rostislav Holthoer

§ 19. — *Elephantine* (Grabung des Deutschen Archäologischen Instituts und des Schweizerischen Instituts, Kairo).

Old Kingdom Pottery

During the 10th excavation campaign in winter 1980/81 the study and evaluation of the Old Kingdom pottery was continued. The first

complex taken for investigation was the pottery from the environs of the older Satet-temple, where a series of deposits sealed between floors has provided a stratigraphy reaching from the Early Dynastic Period into the XIth Dynasty, including the First Intermediate Period.

By analysis of the sherd material from these deposits, it has been possible to identify and define 56 different fabrics of fine, plain, and coarse wares. Criteria employed to define and describe fabric were formulated after the model of petrographic terminology, and are the following : A. Bisquit : 1. Nile- or marl-clay, 2. texture, 3. degree of purity/homogeneity, and 4. porosity of the clay matrix; 5. fracture, 6. color or colors (of core and mantel). B. Impurities and Temper : 1. nature of impurities (defined as inclusions of a diameter consistently smaller than 0,5 mm); 2. nature, 3. grain size, and 4. density (n/cm^2) of temper; particular mention of 5. organic temper, 6. strikingly high concentrations of mica, 7. degree of rounding of temper-grains, etc. C. Surface treatment : 1. different types of roughening, 2. relief decoration, 3. varying degrees of smoothing, 4. burnish, 5. surface color or colors, 6. painted decoration : a) density, b) luster, and c) color(s) of paint, 7. scheme and 8. syntax of decoration. D. Methods of shaping the vessel : 1. handmade : a) modelling, b) coiling, c) building up in plates, d) paddle technique; 2. turned on a slow or on a 3. fast wheel, 4. combinations of these or 5. other methods; further, comments on unusual properties or on the relative quality of sherds of a defined fabric, etc. The definition-limits of fabrics were kept as narrow as possible, in order to obtain an extremely sensitive standard scale for observing the development of the pottery fabrics. It is to be expected that future work should broaden the statistical basis of this material, complement the catalogue of fabrics (in particular, after study of the pottery from the settlement has been concluded), and make possible a re-grouping and condensation of the fabrics to *wares*. A study collection of typical sherds illustrating the characteristics of the 56 fabrics has also been set up.

The preliminary results of stratigraphical analysis based on the first appearance — pursued in the direction from the lowest to the uppermost strata — of the various fabrics would seem to indicate that it was possible to divide the deposits from the Early Dynastic Period to the XIth Dynasty into a series of *seven* stratigraphically and chronologically distinct zones. Future study will show whether this division can be confirmed as valid or whether it may require supplementation or correction.

Further complexes which promise to provide results of great interest are the extensive pottery finds from the necropolis and from the « royal estate » of the IIIrd Dynasty, finds of potters' kilns, levigation-pits, and of collections of lumps which would seem to be of marl-clay excavated by S. Seidlmaier, as well as potsherds tempered with Nummulites.

R. Avila

§ 20. — *Elephantine* (suite).

Keramik des Mittleren und Neuen Reiches

Die Aufarbeitung der umfangreichen Keramikfunde des Mittleren Reiches, die im wesentlichen aus den Siedlungsschichten südwestlich des Chnumtempels stammt, wird ab Oktober 1981 P. Bayerlein übernehmen. Gleichzeitig soll auch die in Elephantine nur spärlich vorkommende Keramik des Neuen Reiches bearbeitet werden.

Spätantike Keramik

Die Bearbeitung der spätrömischen — frühchristlichen Keramik wird R. Gempeler im Winter 1981/82 abschließen. Zum letzten Zwischenbericht siehe *MDIK* 33 (1977), S. 95-100.

G. Dreyer

§ 21. — *Quseir al-Qadim* (Excavations of the Oriental Institute, University of Chicago).

The second season of excavations at Quseir al-Qadim, in 1980, confirmed the site as a small port on the Egyptian coast of the Red Sea occupied during the Roman and Islamic periods. The results of this season have been prepared as a second preliminary report, now in press.

The ceramics of the second season have been presented not as assemblages of key loci, as in the first report, but as a very preliminary typology for both periods. The Roman ceramics are based on the excavation of the Roman Villa, a small merchant's house in which numerous storage vessels and smaller containers were found abandoned. The importance of this excavation lies in the stratigraphy which indicates three phases of occupation : a deliberate land-fill of heavily shereded trash, the occupation as witnessed by the abandoned vessels, and subsequent refuse deposits after the collapse of the building. The terra sigillatas and datable amphorae and other Roman ceramics uniformly suggest a first century occupation, and most within the first half of that century. Nothing definitely pre-Augustan nor post 2nd century has been discovered, offering a possibility of greatly refining the ceramic chronology for this short period. Secondarily, there is increasing evidence of actual Indian vessels as well as African (Sudanese) ceramics within this Roman context.

The Islamic ceramics have likewise been arranged into a provisional typology, again in hopes that this will be more useful for archaeological comparisons. The excavations opened a large (500 sq. m.) area of Islamic village near the beach. The ceramics were somewhat different from those of the 1978 season and seem later, 14th-15th century without a 13th century component. Again there is a surprisingly wide range of ceramic comparanda : African (again Sudanese and East African), Yemeni, Indian wares (close ties may be shown

with Ceylonese ceramics), and Chinese porcelains and celadons, all mixed in this rather humble village debris. Syrian ceramics as well as fine Mamluk wares also make their appearance in this melange. As with the wide-ranging Roman ceramics, the diversity of these Islamic materials has produced problems of comparison which will, we hope, be partially remedied by archaeologists' responses to these preliminary reports.

Janet Johnson

Donald Whitcomb

§ 22. — *Douch, Oasis de Khargeh (Fouilles de l'IFAO).*

The study of the pottery excavated at Douch during the previous seasons has had two main objectives : 1) The division of the ensemble into coherent groups according to their specific properties; 2) The constitution of a repertoire of forms. So far we have been able to divide the locally made pottery into two groups :

1 — The so-called « Kharga red-ware », that is, table wares consisting of plates and bowls closely related in form to North African types (cf. *BIFAO* 80 (1980), p. 335, pl. XCII/3). Nineteen forms have been recorded some of which will certainly prove to have a wide distribution in the Kharga-Dakhla region. In the Nile valley, sherds of this ware, because of similarities in the colour of the clay and the slip, can easily be mistaken for North African products. However, certain peculiarities such as the hand finishing evident on the lower parts of the vessels, and rarely, the carved decoration which replaces the stamped decoration of the North African specimens, and which is sometimes likewise painted, help to distinguish the two products one from the other.

2 — The second group, the more interesting of the two, consists of locally manufactured closed forms with painted decoration. Within

this group two major divisions can be distinguished characterized by different styles of decoration : 1) A style displaying motifs organized in polygonal zones; 2) A « Free style » (cf. the bottle illustrated in *BIFAO* 80 (1980), pl. XCI et C). Over 100 floral and geometrical motifs with their variations form the common repertoire of these two styles. It is also possible to distinguish connections between this group of painted pottery and the late Hellenistic and Christian painted wares. However this question requires further study and in any case its implications lead too far beyond the limits of the present undertaking.

Mieczyslaw Rodziewicz

§ 23. — *'Ayn Asil*, Oasis de Dakhleh (Campagne 1981, IFAO).

La céramique recueillie au cours de la campagne de fouilles 1981 à *'Ayn Asil* et provenant de la phase II du site urbain, n'offre, dans ses composantes générales, pas de différence fondamentale par rapport à l'ensemble céramique (fin de l'Ancien Empire et première période intermédiaire) mis au jour les années précédentes. On retrouve les grandes catégories observées auparavant, une céramique fine à engobe rouge d'aspect brillant, quelques fragments de pots de cuisson dont la texture et la composition de la pâte sont propres à permettre ce mode d'utilisation, les tessons, toujours très abondants, de « moules à pain », jarres et supports de vase; ce dernier groupe étant représentatif d'une technique extrêmement rudimentaire de fabrication.

Quelques exemplaires complets enrichissent la typologie des formes céramiques de *'Ayn Asil* : on peut signaler des vases à bec de petite taille, une jarre ovoïde, un petit vase à col, fortement caréné, un support de vase de très grande dimension.

Parallèlement à l'examen du matériel exhumé pendant la campagne 1981, une étude de l'ensemble de la céramique du site urbain a été entreprise cette année. Elle vise à l'établissement d'une typologie des

formes, des pâtes argileuses et des techniques de fabrication. En second lieu, ont été étudiés d'une manière exhaustive les tessons provenant de quelques couches stratigraphiquement bien différenciées (un millier de fragments environ) afin de saisir, pour chaque catégorie de formes, une évolution interne de la typologie, évolution à confronter à l'ensemble des données archéologiques du site. Conjointement, l'analyse chimique (fluorescence X) de quelques séries fragmentaires ainsi que celle d'argiles prélevées en mars 1981 dans l'oasis de Dakhleh est actuellement effectuée par le Laboratoire de Céramologie de Lyon II (M. Picon), destinée à mettre en lumière les éventuelles modifications dans la préparation de l'argile au cours des différentes phases d'occupation du site et à confirmer l'origine locale de cette céramique.

Pascale Ballet, Paris

§ 24. — *Dakhleh Oasis, Survey (Dakhleh Oasis Project, University of Toronto).*

Pottery and Kilns

The third season of the survey of Dakhleh Oasis took place from October-December 1980. As during the preceding two seasons, a large amount of pottery was collected and we were fortunate enough to find several more pottery kilns. An account of this material appears in the *Journal of the Society for the Study of Egyptian Antiquities* (Toronto), volume XI.3 (1981).

The majority of the material dates to the Roman and Christian periods, though finds made at the site of Mut el-Gharub, the capital of the oasis, prove definitely the existence of Ptolemaic and late dynastic material. A stratified sequence of pottery from this period was excavated at one of the ruined temples found during the season. Of Ptolemaic-Roman date were several very large tomb groups. The

pottery of the Christian Period from the site of the church of Deir Abu Metta, which is associated with coins of Constantine the Great and Theodosius I, will provide a valuable corner stone for the study of the period.

Little dynastic Egyptian material was found, though this was more than compensated for by the discovery of what may be sherds of late pre-dynastic date and type on a large site which provided decorated local pottery, handmade, associated with chipped stone tools of Neolithic type. Several large sites of this period were found. The site of Mut el-Gharub, referred to above, yielded sherds of Old Kingdom, possible Middle Kingdom, New Kingdom and Late Period date.

The kilns found during 1980 are dated to the Roman and Islamic Periods. Those of Islamic date occur at two sites, one with a nearby settlement which it served, and the other with only a hamlet in its vicinity. The latter kiln site may comprise as many as 15 kilns, of different dates within a short time span; the kilns are well-preserved. The Roman kiln was found near a large cemetery with no visible settlement in the area. It is by far the largest of the kilns which have been found, provided with three arches to support the stacking platform, air vents at the rear and a covered-in channel leading up to the door.

Colin A. Hope
Prahran College, Melbourne

§ 25. — *Sedeinga*, Soudan (Centre de Recherches Archéologiques du CNRS).

La troisième campagne de la SEDAU (*Sedeinga Archaeological Unit*, mission au Soudan de l'URA n° 4 du Centre de Recherches Archéologiques du CNRS dirigée par J. Leclant), s'est déroulée du 15 Février au 20 Mars 1981.

Vingt sépultures d'époque méroïtique ont été dégagées. De types divers, avec superstructures en pyramide, toutes ont été pillées, quelques-unes sans doute encore très récemment.

Le matériel recueilli est homogène, d'époque méroïtique classique. Il consiste essentiellement en poteries. Celles-ci sont le plus souvent à base globulaire et long col, parfois peintes. Les décors sont d'un heureux effet décoratif : grenouilles avec tiges végétales ansées ou avec autels et disques à cornes, serpent, motifs végétaux. Signalons aussi deux petits vases à fond plat et anse recueillis au bas de la descenderie de la tombe 119, entre le mur de la fermeture de la tombe. D'autres poteries, à pâte brune, présentent des motifs géométriques incisés.

J. Leclant

§ 26. — *Kerma*, Soudan (Mission Archéologique de l'Université de Genève).

Au cours de la saison 1980-1981, la Mission Archéologique de l'Université de Genève au Soudan a poursuivi ses travaux sur le site de Kerma. La fouille s'est déroulée dans la ville et dans la nécropole orientale où trois secteurs attribués au Kerma ancien ont fait l'objet d'une étude.

Dans le dégagement le plus septentrional, la céramique recueillie est composée en majeure partie de bols rouges à bord noir, fins et lustrés, portant souvent un décor très simple sur la lèvre; les récipients étaient déposés à l'envers, à côté des sépultures.

Lors de la fouille du deuxième secteur, situé plus au sud, une grande quantité de tessons et de bols entiers, toujours renversés, a été recueillie. Cette céramique se différencie de celle trouvée plus au nord surtout par son décor. Nous sommes toujours en présence de bols dont la qualité et la forme varient peu. En revanche, les motifs qui ornent la lèvre s'enrichissent.

Le troisième secteur exploré était perturbé mais a permis néanmoins de faire des observations significatives. La céramique présente en effet des modifications par rapport aux exemples inventoriés auparavant. Les bols rouges à bord noir sont de facture plus grossière, leurs décors moins bien exécutés. Une autre catégorie de céramique, constituée par des bols en pâte chamois, ornés de pois en relief, fait son apparition.

Beatrice Privati

II

INFORMATIONS GÉNÉRALES

§ 27. — *Groupe International d'Etude de la Céramique Egyptienne.*

The regular meeting of the editorial committee concerned with the publication of the Introductory Manual of Ancient Egyptian Pottery took place in Stockholm during August, 1981. Present were : Dorothea Arnold, Janine Bourriau, Helen Jacquet-Gordon, Manfred Bietak and Hans-Åke Nordström. Discussion centered mainly around problems of typology. The late winter is the date now envisaged for submitting the first volume of the Manual to the press. During their stay in Stockholm the Group was received at the Swedish Academy. They also visited Professor Säve-Söderberg and Professor Holthoer at Uppsala University where they had the opportunity of speaking with the students about the progress of the Manual.

§ 28. — *Meeting of Ceramologists at the Fitzwilliam Museum, Cambridge.*

A meeting of the Group was held in the Fitzwilliam Museum, Cambridge, 15th - 17th October, 1981. Two days were devoted to a colloquium on the subject *Typology and Seriation*, during which 12 papers were given of which abstracts are included below under section VI.

On the final day Dr. Dorothea Arnold gave the fifth Glanville Memorial Lecture to the University of Cambridge on the subject : *Ancient Egyptian Pottery : Seven Phases of Evolution.* This lecture will be published in the forthcoming jubilee volume of the Mitteilungen of the German Institute of Archaeology in Cairo.

The Group also visited the temporary exhibition : *Umm el-Qa'ab : Pottery from the Nile Valley before the Arab Conquest*, in the Fitzwilliam Museum. This consists of over 270 items of pottery from Egypt and the Sudan, dating from the Neolithic to the Christian periods, and drawn from the collections of the Ashmolean Museum, Birmingham City Museum, British Museum, Fitzwilliam Museum and Petrie Collection, University College. This exhibition which lasts until 11 December, 1981, was organized by Janine Bourriau who likewise wrote the detailed and fully illustrated catalogue published by Cambridge University. The catalogue is available in paperback from the Museum at £5.95 p.; elsewhere in hard-back at £17.50 p.

§ 29. — Résumé de l'article *Un groupe d'amphores égyptiennes estampillées d'époque ptolémaïque*. A paraître dans le *Bull. du Centenaire*, suppl. au *BIFAO* 81 (1981).

Une étude au Musée Gréco-Romain d'Alexandrie a permis d'isoler un groupe d'une centaine d'anses portant des noms égyptiens transcrits en grec ($\bar{\epsilon}\rho\iota\epsilon\bar{\nu}s$, $\Pi\epsilon\tau\bar{\omega}s$) ou des noms grecs principalement employés en Egypte ($\Delta\bar{\delta}\nu\alpha\xi$). Différents critères permettent de les dater respectivement du milieu du III^e siècle à la fin du II^e siècle av. J.C. Une amphore complète a pu en être rapprochée, donnant ainsi une physionomie plus précise au groupe.

Ce groupe d'amphores (on n'en a jamais trouvé hors d'Egypte jusqu'à présent) provient sans doute du Fayoum où l'on a récupéré plusieurs de ces anses : dès la moitié du III^e siècle av. J.C., cette région exportait du vin vers Alexandrie et le reste du pays. Or nous possédons pour cette période les riches archives de Zénon et parmi cette masse de lettres, de bordereaux, d'évaluations de stocks, toute une correspondance entre Zénon et les potiers qui travaillaient pour le domaine de Philadelphie dont il était l'intendant.

Parmi ceux-ci figure un certain Éριεῦς que l'on a peut-être le droit d'identifier avec le potier dont le nom apparaît sur des anses de notre groupe, datées par d'autres critères d'environ 250 av. J.C.

Ce rapprochement nous invite à examiner les renseignements uniques que les archives de Zénon nous livrent sur le travail des potiers : lieux de travail, condition (surtout des artisans à leur compte), prix des amphores, productivité, usage des amphores étrangères de réemploi face aux amphores fabriquées sur place, etc...

Le premier groupe reconnu d'amphores indigènes permet de réestimer la production locale que l'on avait tendance à rabaisser si ce n'est à nier (cf. P.M. Fraser, *Ptolemaic Alexandria*, Oxford (1972), II, p. 285-286, note 283).

Virginia R. Grace

(American School at Athens, Agora Excavations)

Jean-Yves Empereur

(Ecole Française d'Athènes).

§ 30. — *Inventory of ceramic material in the Berlin Museum (DDR).*

Since 1980 I have been engaged in documenting and cataloguing the New Kingdom material in the Berlin Museum (DDR) collections. The largest part of the material (400 pieces) is included in the original *Inventar* coming from donations and purchases in the late 19th century. The rest of the material comes from the German excavations at Deir el-Medina and El-Amarna. Last summer (1980) a large amount of uninventoried material (about 600 pieces) from the Deutsche Orient Gesellschaft excavations at El-Amarna 1911-1914 emerged. It is planned to publish this material in the framework of the CAA-project in accordance with new « Richtlinien » to be made up for such material. In this project Dr. Martha Bell is taking care of the Aegean and the Cypriote material from the said site. It is our

intention that the CAA volume dealing with pottery should function as a complement to the newly published DOG report on the houses of El-Amarna.

Rostislav Holthoer

§ 31. — *Two Potter's Wheels.*

I would like to announce the identification of two potter's wheels from the Nile Valley. They come from Amarna and Khor Ahmed Sherif, Sarras East; the two are published in the *Journal of the Society for the Study of Egyptian Antiquities* (Toronto), volume XI.2 (1981). Like similar objects from the Levant, they comprise two stones, one (the lower) with a central well in which rotates the upper stone which has a central tenon. The exterior surfaces of both stones are rough while the inner faces, with the well and tenon, are highly polished. It would appear that for these stones to function as a potter's wheel it was necessary to attach to the upper stone a circular disc, probably of wood, which functioned as the wheel-head.

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III

CLASSEMENT CHRONOLOGIQUE DES INFORMATIONS INCLUSES DANS LES PARTIES I ET II

Prédynastique : 14, 24.	Romain : 6, 11, 24.
Période Archaique : 4, 13.	1 ^{er} -2 ^e siècles : 1, 7, 21.
Premières Dynasties : 19.	Tardif : 6, 7, 16, 20.
Ancien Empire : 13, 14, 19, 24.	Chrétien : 16, 22, 24.
III ^e Dynastie : 19.	Ancien : 20.
VI ^e Dynastie : 4, 10, 23.	6 ^e -7 ^e siècles : 8.
Kerma Ancien : 26.	5 ^e -8 ^e siècles : 1, 2, 6.
1 ^{re} Période Intermédiaire : 4, 13, 19, 23.	Islamique : 6.
Moyen Empire : 17, 20, 24.	14 ^e -15 ^e siècles : 21.
XI ^e Dynastie : 19.	<i>Importations :</i>
Antérieur au Nouvel Empire : 15.	Chinoise : 21.
Nouvel Empire : 9, 20, 24, 30.	Cingalaise : 21.
XVIII ^e Dynastie : 10, 12.	Egéenne et Cypriote : 30.
Thoutmosis IV : 17.	Grecque Orientale : 3.
Postérieur à Aménophis III : 17.	Indienne : 21.
Amarna : 30.	Nord Africaine : 22.
Tutankhamon : 18.	Nubienne : 14.
XIX ^e Dynastie : 5, 9.	Soudanaise et Est Africaine : 21.
3 ^e Période Intermédiaire : 4, 5.	Syrienne : 21.
Période Tardive : 4, 9, 12, 15, 16, 24.	Yéménite : 21.
Ptolémaïque : 3, 4, 7, 11, 24.	Céramique Vernis : 6.
3 ^e -2 ^e siècles : 29.	Fours à Potier : 19, 24.
Méroïtique : 25.	Graffiti sur Jarres : 17, 29.
	Tour de Potier : 31.

IV

PUBLICATIONS RÉCENTES SUR LA CÉRAMIQUE DE LA VALLÉE DU NIL

1. — Janine Bourriau, « Umm el Ga'ab : Pottery from the Nile Valley before the Arab Conquest », *Catalogue de l'exposition*, Cambridge, 1981.
2. — Jeanne Bulté, *Catalogue des Collections égyptiennes du Musée National de Céramique à Sèvres*, Ed. du CNRS, Paris, 1981.
3. — Colin Hope, « Preliminary Report on the 3rd Season of Excavation in the Dakhleh Oasis », *JSSEA XI/4*, Toronto, 1981.
4. — Colin Hope, « Two Ancient Egyptian Potter's Wheels », *JSSEA XI/3*, Toronto, 1981.
5. — Francis Geus, *Rapport Annuel d'Activité (1979-1980) de la Section française de Recherche Archéologique du « Soudan Antiquities Service »*, Khartoum, Lille, 1981.
6. — Brigitte Gratien, « Sai, 1978-1980 », *CRIPEL VI*, Lille, 1981.
7. — Kemp, Merrillees and Edel, *Minoan Pottery in Second Millennium Egypt*, Mainz, 1980.
8. — Dimitri Meeks dans Georges Castel, *Deir el-Médineh 1970*, Fasc. 1, « Gournet Mar'aï Nord », *FIFAO XII/1*, 1980, Chapter III « La Tombe 1455, Poterie et Habitat ».
9. — Mieczyslaw Rodziewicz, « Thermes romains près de la Gare Centrale d'Alexandrie », *Etudes et Travaux XI*, Warsaw, 1979.

V

PROSPECTION ET SAUVEGARDE DES ANTIQUITÉS DE L'ÉGYPTE

CENTENAIRE DE l'I.F.A.O., 8-12 JANVIER 1981

Nous publions ici des résumés des trois communications faites au cours de la Table Ronde, qui soulignent l'apport de la céramique aux travaux de prospection. Ces communications sont publiées *in extenso* dans le volume : *Prospection et Sauvegarde des Antiquités de l'Egypte*, Ed. Nicolas Grimal, qui vient de sortir de la Presse de l'IFAO.

1. — « *Céramiques et problèmes d'identification en archéologie islamique* ».

Dater une céramique, lui attribuer une origine géographique et connaître sa signification dans le contexte archéologique qui l'entoure, sont un souci qui concerne l'archéologie en général. Ces questions se posent de façon accrue pour les périodes médiévales et modernes.

1) Identification des lieux de production.

La céramologie des périodes islamiques est encore trop souvent basée sur des critères stylistiques, sur les « belles pièces ». Cette classification superficielle devrait laisser la place à une typologie, résultant des fouilles, qui est basée sur une observation des qualités des pâtes.

2) Identification chronologique

Il est important de tenir compte de la durée de vie considérable que peuvent avoir certaines céramiques inscrites bien datées, avant

de généraliser une telle datation à l'ensemble de la couche dans laquelle elles ont été trouvées. Une céramique est représentative d'une époque et d'un lieu en fonction du pourcentage qu'elle représente par rapport à l'ensemble des autres types.

3) Identification d'un site prospecté

C'est l'application concrète sur un terrain a priori inconnu, d'une bonne typologie et d'éléments chronologiques bien définis. Dans le cas où les productions locales sont strictement inconnues, la présence de rares céramiques d'importation peut donner des indications utiles.

Roland-Pierre Gayraud
GREPO, ERA 648 du CNRS

2. — « *Prospection en milieu désertique : quelques cas exemplaires en Nubie soudanaise* »

La sauvegarde d'un site archéologique passe nécessairement par la connaissance de sa nature et de son étendue. La réponse traditionnelle par la fouille n'apparaît plus à l'heure actuelle comme un moyen de description adéquat, et tend à céder la place à certaines formes de reconnaissance à partir de la surface.

Les moyens géophysiques se sont développés au cours des vingt dernières années et permettent, dans certains cas, une détection interne des vestiges à partir de simples mesures de surface. Si la résistivité électrique en milieu désertique présente de grandes difficultés de mesure, l'expérience acquise à Mirgissa a montré que la prospection magnétique est bien adaptée à la détection des constructions en briques de limon recouvertes par le sable. La prospection électromagnétique a également permis des détections intéressantes et devrait conduire à de nouveaux progrès par ses développements instrumentaux récents.

L'attrait des appareils modernes ne doit cependant pas faire oublier l'intérêt de méthodes plus conventionnelles telles que la collecte des vestiges superficiels (la céramique par exemple), lorsqu'elles sont mises en œuvre dans des conditions rigoureuses d'échantillonnage et d'analyse. Plusieurs exemples de travaux réalisés ces dernières années, sur la forteresse de Mirgissa et deux sites d'habitat dans l'île de Saï, permettent de définir les difficultés et la richesse des renseignements rencontrés dans l'utilisation de cette méthode.

Albert Hesse, CNRS

Centre de Recherches Géophysiques, Garchy

3. — « *Pottery as an Essential Aid to Surface Survey* »

The idea of « Surface Survey » is not new to Egyptian archaeology, witness the extensive surveys carried out at various times in Nubia. These were greatly facilitated by the existence of an infrastructure based on Reisner's ceramic studies in the area. Comparable studies in Egyptian pottery are now being prepared which it is hoped will provide the essential basis on which surface survey work in great measure depends. The main kinds of information to be gleaned from the systematic observation and recording of pottery during survey work can be summarized under the following headings :

- 1) Identification of new sites in areas otherwise devoid of visible surface indications.
- 2) Absolute or relative dating of sites both internally and in relation to other neighbouring areas.
- 3) Determination of the nature of sites.
- 4) Indication of trade connections and cultural contacts.

Helen Jacquet-Gordon

VI

TYPOLOGY AND SERIATION : A DISCUSSION OF RECENT WORK

COLLOQUE TENU À CAMBRIDGE, 15-17 OCTOBRE 1981

Nous publions ici des résumés de toutes les communications dont on a reçu le texte. Quant aux autres, nous n'en donnerons que les titres.

1. — *The Scope and Limitations of automatic seriation.*

It is about 20 years since I was asked by R.W. Hamilton to give a professional statistical opinion on the adequacy of the seriation exercise for pre-dynastic Egyptian pottery undertaken by Sir W.M. Flinders Petrie at the beginning of this century. As a result of that enquiry, I devised a mathematical technique for seriation which has now been implemented in the form of a computer package held on the Cambridge IBM machine, and it has been used for example by Dr. B.J. Kemp (cf. *MDAIK* 31 (1975) and the forthcoming *JEA*). I have been asked to contribute briefly to your proceedings by saying in a few words what the package does, and indicating what background knowledge is necessary on the part of the user if he is to get the most out of it, without being misled by it.

To begin with, there are precautions to be observed which concern the nature and form of the input to the package. Thus it is basic to the whole spirit of the method that the sites (corresponding to the rows of the data matrix) should have the nature of « closed finds », so that the contents found in them can reasonably be considered to belong to a single epoch, or at the least to a narrow band of epochs.

It is also taken for granted that the material found in the sites has been subjected to a careful and relevant typological analysis, and it is vital that some of the features used in the construction of that typology should have a reasonable chance of possessing some perhaps not previously recognised relationship with chronological trends. A typology which has no chronological relevance at all cannot be expected to yield a helpful seriation. On the other hand, just what in the typology does have chronological significance may not be known in advance.

The data, arranged as a matrix of graves against varieties, can either take the form of an « incidence » matrix with entries 0 for absence and 1 for presence, or it can be an « abundance » matrix which tells us how frequently or with what strength a particular variety is represented in a given grave. Very great care must be taken in the preparation of the input matrix, especially because it may turn out that one or two entries will ultimately exert a major influence on the output. To some extent this possibility can be controlled by making repeat analyses using copies of the original matrix subject to random deletions, and then comparing the results.

In the analysis itself many different options are available, and have to be set by the user, preferably after taking advice. It is rarely possible at present to decide in advance what options will be most suitable in any given case, and so some experimentation is desirable. After a little of this, some of the information provided by the printed section of the output can be used to make a better choice of options, when their purpose and nature are understood.

The output itself takes two forms, and I will deal first with the graphical output (which is automatically plotted). One can choose to set the number of dimensions for the plot to 1, 2 or 3, but it must be emphasized that save in quite exceptional circumstances the one-dimensional setting should never be used. This is because, in one dimension, the output cannot help taking on the form of an unequivocal

seriation, even with nonsense data. In two or three dimensions, even when a seriation is possible and has to a certain extent been unveiled, there will be a scatter about it which will affect one's degree of confidence in it and which represents the major component of residual error.

The simplest way of describing how the whole thing works is to say that the input matrix is converted in a specific technical way into a « dissimilarity » matrix which is square, and where both rows and columns now relate to graves only. What the entries in the cells of the matrix then tell us about two graves is : how « dissimilar » they are in respect of the objects severally contained in them. The computer package then attempts to produce a « map » in the desired number of dimensions in which two very dissimilar graves are represented by two points far apart, and two very similar graves are represented by two points relatively close together; more exactly, the dissimilarity relationship is converted into a geometrical distance relationship and this produces the picture which is plotted. The success of the method partly depends on the huge number of inter-grave comparisons, in relation to the much smaller number of grave coordinates in the map to be produced. Sensible answers can be obtained with as few as say 25 graves. But a number of graves in excess of say 125, raises special difficulties of computer time and storage, and would probably be tackled piecemeal.

I regard it as absolutely essential to have drawn on the map a set of line segments joining those pairs of graves which the data indicates as being closely similar. The critical degree of similarity for such segment-drawing is one of the options which has to be set when the program is run. It may be revised later. One is thus presented with a two dimensional plot in which the graves appear as points and in which graves « strongly linked » by the data are joined by line segments. One then tries to find in this, by visual inspection, evidence for an intrinsically one-dimensional arrangement : notice that this does not necessarily mean an arrangement along a straight line. Such

an arrangement will be given little credence if it is contradicted by the behavior of the strong links. Thus an arrangement of the points representing the graves around the perimeter of a semicircle would not be found impressive if there were many strong links running from one extremity to the other.

A great deal of useful information is conveyed by such links. For example, it helps one to recognize, by an abundance of strong links running to and from a single grave, that such a grave is exerting a powerful influence on many others in forming the pattern. In such a case one could try removing the exceptional grave and running the program again.

The calculation starts by adopting random positions for all the points representing graves; it then modifies these positions in a recurrent manner. It is always useful to repeat the analysis several times with different random starts in order to pick up «floaters»: that is, graves different placed on each occasion because the extent of their linkage to the others is too slight to define their relative positions, and whose ultimate position in any seriation will therefore be treated with extreme reserve.

I turn now to the printed output. This includes sorted versions of the original data matrix. The sorting both of graves and varieties is done quite automatically, and so we must recognize here one supremely important point. There may appear to be a one-dimensional arrangement underlying the data; it may be visible in the plot and confirmed by the strong links, and it may result in an appropriately block-diagonal form of matrix after sorting — and yet it can fail to be a chronological seriation. This is because the seriation we have found may be geographical or sociological and not chronological at all. How are we to know this? The only answer to that question is: look at the «ends» of the seriation, identify the two sets of graves that occur there, and check whether there are external reasons for regarding these as chronologically extreme.

After getting so far as this you may wish to move some graves about in the pattern; for example if you suspect that a particular grave represents a series of generations and so has unreasonably many ties with the others. One can always restart the analysis with this new hand-corrected arrangement, and then see what response the package will make to that.

To conclude : the aim of the whole strategy should be to make the mathematics plus the computer do for you what they are good at, while leaving you at the end of the day to carry out the tasks you are good at, and indeed which only you can do. What is the computer good at?

- 1) Performing calculations at fantastically high speeds.
- 2) Analysing vast quantities of data without fatigue, at a maintained standard of reliability and « judgement ».
- 3) Analysing data without reference to extraneous considerations : you will probably wish to give due weight to these at the time of your later intervention, but it is immensely valuable to see just what the data set wishes to tell you of itself.
- 4) Performing fresh analyses of the same data set without remembering or in any way reacting to the results of previous ones. To a human operator this is almost impossible. You may be unbiased the first time — but the second ?

When all this has been done, the archaeologist must be prepared to sit down with the printed and plotted output before him, and to read it through in detail against the original data set and all that he knows about its provenance, and the context in which currently it would be right to view it. This is an immensely tedious task, but those who ask for a computer analysis and then fail to do their own part are abusing the facilities offered, and will surely mislead themselves and their colleagues.

D.G. Kendall

2. — *Problems of Seriation at Sedment.*

In the search for an inner chronology of First Intermediate Period to early 12th dynasty pottery the method of seriation was applied to the ceramic material found at Sedment. A study of cemetery G — the largest of the site — seemed the most appropriate starting point. In this cemetery (Petrie-Brunton, *Sedment II*, London, 1924, pl. 89) the presence of horizontal stratigraphy is indicated by the position of the mid-12th dynasty tombs in the south-eastern corner (tombs 379, 382 etc. with different orientation). In trying to determine a chronological sequence for the remaining tombs, the following problem emerged.

If all main types and variations found in the tombs were plotted against tomb occurrences, no grouping of any kind could be gained. Results were obtained only if a selection of types was made. This selection was governed by the observation, that certain types and variations occur together at random whereas others are linked together by co-occurrence in such a way that a reasonable sequence emerges. For instance within the very prominent type 64, the variations 64 f, g, h, j, m, p occur with each other and with the rest of the repertoire quite at random. But 64 l, b, c, d and k each shows co-occurrences limited to only one or two of the other variations. Thus : 64 l occurs only with 64 b; 64 b only with 64 l and c; 64 c occurs with 64 b and d, and 64 d with 64 c and k, while 64 k is found only in connection with 64 d. That the sequence thus indicated : 64 l - 64 b - 64 c - 64 d - 64 k is most probably to be interpreted as a chronological series, can be shown by two points :

- a) In tomb 1680 variation 64 b was found together with a number of amulets (Petrie-Brunton, *Sedment I*, pl. 12, 1-33). These amulets are very similar to another group found at Matmar (G. Brunton, *Matmar*, London, 1948, pl. 41, 306), there accompanied by a pot of Upper Egyptian type, which can be dated by comparison to the

pottery of El-Tarif to the early 11th dynasty. In tomb 290 at Sedment, 64 d was found together with a scarab (decorated with a lion) which has been dated by Ward to his stage 3, *i.e.* just before the unification. Furthermore, 64 k is linked in tombs 1681, 1823 and 72 with type 66 g which in its turn was found in tomb 2127 together with a coffin dated by palaeographic peculiarities to the late 11th, early 12th dynasty (W. Schenkel, *Frühmitteläg. Studien* 41, 30). Thus it is indicated, that the series 64 l, b, c, d, k stretches from the early 11th (called 9/10 in Sedment) dynasty to the early 12th.

b) Based on the tombs with types 64 l, b, c, d and k, a reasonable horizontal stratigraphy can be worked out for cemetery G. The earliest tombs (the ones with 64 l as well as 1515, which contains 6th dynasty types) are situated in the lower middle to the right (squares Hc, Jc). The following tombs with 64 b, c, d, enlarge this area to the North (squares Dc-Gc and Dd-Gd), while the latest tombs with 64 k pots are situated around this last area to the west, south and east. In the latter direction they mingle with the area of the mid-12th dynasty tombs.

If thus the series 64 l, b, c, d, k can be understood as a chronological development, the question arises, why the other variations of type 64 do not partake in this change in time? At first glance there is no particularity in 64 g, for instance, to distinguish it in this way from 64 l, b, etc. However 64 g is one of the most frequently occurring types and one of the most long-lived. It is clearly essential to differentiate between such long-lived and the short-lived types before any mechanical seriation process can be undertaken.

Dorothea Arnold

3. — *A Review of scientific examination of Egyptian ceramics.*

The contribution of scientific instrumental techniques of study of Egyptian ceramics was considered in relation to : the determination

of the original place of manufacture (provenance studies), the identification of the pigments used, including the black iron/manganese oxides and cobalt aluminate blue, and techniques of production of the pottery, including firing temperature.

Michael J. Hughes

British Museum Research Laboratory, London.

4. — *Towards a Typology of Decoration*

The following outline (Page 41) explains in graphic form the model proposed for the analysis of design on blue-painted pottery.

Colin Hope

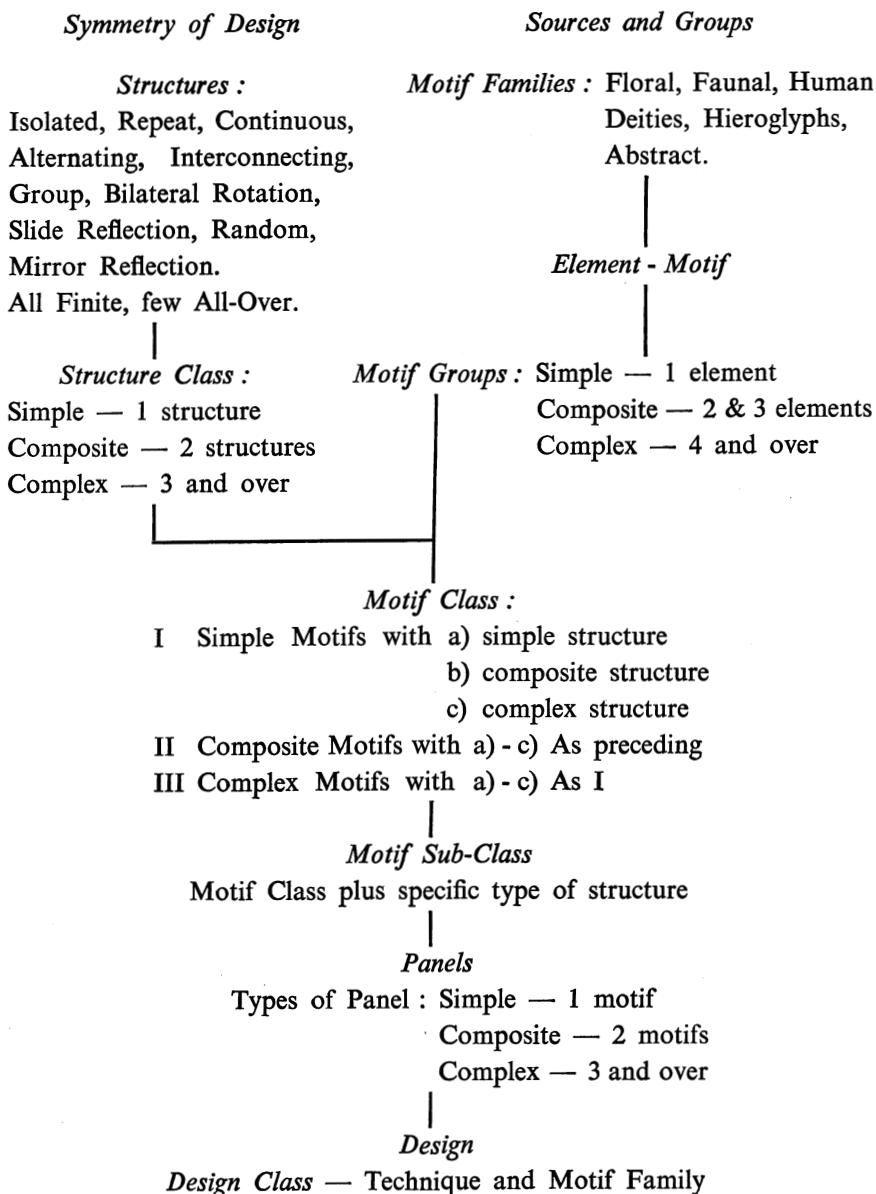
Prahran College, Melbourne

5. — *The Classification of Moulded Material.*

Where moulds are used to fashion clay, whether into whole vessels, statuettes or figure-vases or simply to provide subsidiary attachments or relief decoration, the system of replication that results imposes its own rules in what was one of the chief fields of ancient mass-production. To date, our understanding of these rules has been mainly drawn from the detailed study of certain kinds of Greek clay statuettes and figure-vases, but the rules themselves have a general validity for all things moulded in clay.

First a model, or archetype, was fashioned, usually of clay, and fired. From this moulds were taken, whether simple single moulds or elaborate sets of piece-moulds according to the complexity of the subject. The moulds could be of fired clay or plaster. The Egyptians seem to have had early cognizance of plaster moulds, but apparently preferred clay for faience, and possibly also for terracotta, well into the Late Period. Plaster moulds for shaping clay became widespread in Egypt and in the Mediterranean area in general from late

TECHNIQUES : Painted, Modelled, Moulded, Applied, Cut-Out



Hellenistic times on, but some fine fabrics seem to have kept to clay ones for a considerable time after that. It had early been realised that many raised details could be far more effectively rendered by incising them on the moulds than by building them up in relief on the original archetype and this incision was far subtler on clay moulds where it was done as they dried in the air before firing. The result is that one frequently has evidence of numbers of « parallel » moulds all taken from the same archetype but showing variations in this relief detail. The mass-produced products of the moulds just described are known as the « first generation ». Because of clay shrinkage, they will be about 10 % smaller than their archetype if clay moulds have been used or about 5 % smaller if the actual moulds have been of plaster. Only these « first generation » products can be automatically assumed to belong to the original workshop and the original fabric. Thereafter, any of these products could themselves be used as archetypes from which new moulds were taken and this could happen literally anywhere in the ancient world. The products of these derivative moulds (the « second generation ») will be about 10 % (or 5 %) smaller again. Indeed, frequently such a « series » (the name given to all the products derived directly or indirectly from a single archetype) may pass through many such « generations », growing progressively smaller at each stage. Sometimes the workshops deliberately facilitated the process by using their existing moulds to produce derivative « secondary archetypes » instead of finished figures or vases to help extend the process down into a further « generation ».

It is an interesting phenomenon of moulded clay figures and vessels that frequently a single craftsman seems to have been commissioned to produce a whole set or « group » of different but related archetypes and their « first generation » moulds. Where this occurs, any proper classification needs first to identify the « group » involved, then the « series » within the « group » and the « generation » within the

« series », as well as drawing attention to any « parallel » variations attested.

Egypt seems to have played a special role in the evolution of the more complex techniques in which piece-moulds were used for hollow-moulding clay statuettes in the round and, above all, figure-vases. The sets of moulds that were a necessity for some of the more elaborate ventures in Egyptian faience-working may have had a direct influence in this, leading, e.g., to the delightful hollow-moulded pottery figure-vases of Dynasty XVIII. Again, it seems to have been the copying of Egyptian faience figure-vases in East Greece in the mid 7th century B.C. that inspired the start of hollow-moulding in clay in Greece. And it was this technique that was brought back from Greece into Alexandria at the beginning of the Hellenistic Period and gradually spread thence throughout the whole country, leading to a wealth of Graeco-Egyptian and Romano-Egyptian moulded pottery statuettes, lamps, figure-vases and relief vessels.

Richard Nicholls

6. — *Documentation and then what?*

Questions concerning the documentation of pottery have been pretty thoroughly discussed at previous meetings of the International Group. The problem now, particularly on stratified sites producing large quantities of sherds, is how best to get a maximum of information from this mass of material once it has been documented and preliminary analyses of a traditional nature have been carried out. The question is asked whether the use of seriation techniques on closed families of related forms within the frame-work of the stratification might not give useful results. It is proposed to make a trial of such techniques on the vertically stratified site of Karnak North, adapting to this use the methods usually applied to horizontally stratified cemeteries. The closed pottery groups from individual

tombs which ordinarily form the basis of comparison in cemetery seriation would here be replaced by associated groups of forms from the various strata. It is hoped that such a study might help on the one hand to indicate more clearly the internal evolution of particular families of forms, and on the other to establish a line of development in the associations of groups of different forms, over a period of time.

Helen Jacquet-Gordon

7. — *The Archaeologist and the Ceramologist.*

Because we are brought together by a common interest in ancient Egyptian pottery, we may at times lose sight of the fact that we are not all interested in it for the same reasons. Some of us are primarily archaeologists (i.e. excavators), and others primarily ceramologists. As such we are looking at the same basic corpus of material (primarily potsherds), but we are asking fundamentally different questions of it. The archaeologist is interested primarily in what the pottery can tell him about his site, while the ceramologist wants to know what the site can tell him about the pottery. Pottery is for the archaeologist a means, while for the ceramologist it is an end.

It is my contention that the distinction between archaeologist and ceramologist is a legitimate and necessary one, and that it is widely misunderstood. The two tasks may, and perhaps even should, be performed by the same individual, but he needs to keep the conceptual difference between them clear in his own mind, and to employ analytical procedures and conceptual tools appropriate to the questions he is asking at any given time.

In this paper I have identified and discussed five points of conceptual distinction between the archaeologist and the ceramologist:

1. The ceramologist is interested in pottery as a key to the behavior of people, while the archaeologist is only interested in the

behavior of potsherds themselves. Thus, the ceramologist has a better claim to the title of Social Scientist or Historian than has the archaeologist.

2. The type concept is central to the analytical methodology of both ceramologists and archaeologists, but they use it in fundamentally different ways. To the ceramologist a type is ideally a type of whole vessel, while to the archaeologist it is merely a type of potsherd — a discrete data unit in its own right. The fact that a sherd was once part of a pot can be disregarded as irrelevant for the archaeologist's purpose.

3. The typologies of ceramologists are almost necessarily non-comprehensive, partly because they are usually given incomplete data to work with. A great many sherds and even some whole vessels are treated as having no type identity, because they do not conform to any established norms. On the other hand the quantitative methodology employed by the archaeologist requires that typologies be comprehensive; every sherd must be assignable to one and to only one type.

4. While the ceramologist measures change by the evolutionary development of particular types, and by their ultimate appearance and disappearance, the archaeologist can measure change more accurately by noting the fluctuating percentage relationships among types which individually may not be changing.

5. The ceramologist is ultimately concerned with explanation, while the archaeologist is ultimately concerned with prediction. Both are legitimate and necessary scientific ends.

William Y. Adams

8. — *Old Kingdom Pottery from Elephantine* (Robert Avila).

Le résumé de cette communication n'a pas été reçu.

9. — *Approaches to pottery from large scale construction projects.*

Recent work on Late Period sites in Egypt, especially in the Delta, has meant the investigation of many large-scale ancient construction projects, in particular, large mud-brick platforms with internal chambers. Since many of these projects substantially disturb the stratigraphy around them and create their own artificial stratigraphy, some way must be found to deal with the pottery and objects coming from these contexts.

The excavation of a number of these platforms at Mendes during 1979-80 is used as a case study. Excavation showed that these structures were Saite in date, but that they were cut into and built on a massive fill which contained only Third Intermediate Period material. Despite all the dumping, cutting and filling in this area, the material was still in the correct chronological sequence, which raises a number of interesting stratigraphic problems.

Even though almost all the pottery recovered came from secondary contexts, the wealth and diversity it exhibited, the large number of imported sherds from all over the eastern Mediterranean it contained, and the lack of knowledge about the pottery of these periods in the Delta, meant that it had to be organized and dealt with in a meaningful way. After considering numerous approaches, the one most likely to provide a good frame-work for ordering the material and isolating imports, seems to be a ware typology. This arranges the pottery into its original groupings — as the production of a particular industry or geographical area — and is inherent in the material itself and is not imposed by the typologist.

It is also recommended that ware analysis and the formulation of a ware typology be done in the field with the primary data still

in hand. This should prevent one from being overwhelmed by a large body of diverse and often unparalleled material, provide a framework into which new types would fit, and enable one to see more clearly the range of variation of a particular type. Since more analysis would be done in the field, it would, it is to be hoped, result in a quicker and more accurate final analysis and publication of the material.

Susan J. Allen

10. — *Classification de la culture Kerma à Saï.*

La nécropole Kerma de Saï comporte plusieurs milliers de tombes. Nous avons décidé d'ouvrir des sondages dans les trois zones distinguées en surface et avons fouillé près de 300 tombes. Un pillage intensif a bouleversé ces cimetières, mais les découvertes et le matériel étaient beaucoup plus complexes que les éléments trouvés par Reisner à Kerma ou sur les autres sites Kerma alors connus. Les objets égyptiens sont quasi-inexistants à Saï et n'apportent que quelques points de chronologie absolue. Par contre des parallèles ont pu être établis avec les autres cultures nubiennes, Groupe A et Groupe C.

La céramique a joué un rôle important dans la détermination des phases Kerma : Kerma ancien, Kerma moyen et Kerma classique. Il n'y a pas de cassures entre les trois phases discernées, mais une évolution, ce que nous avons traduit par la création de phases de transition.

Dans la classification de la céramique, nous n'avons guère tenu compte de la composition de la pâte qui présente toujours les mêmes caractéristiques. Le traitement de surface est ici secondaire. La forme, la cuisson et surtout le décor, sont essentiels. La forme reste toujours très simple. Le décor, riche au Kerma ancien, a tendance à s'appauvrir par la suite. Ces éléments servent à constituer des sous-divisions à l'intérieur des classes principales.

Une trentaine de classes ont ainsi été constituées. Certaines ont été utilisées pendant deux phases Kerma ou trois et ne sont pas

datas. D'autres sont caractéristiques d'une seule phase comme nos classes A VIII, A XI, A XII, M V, C III. Dans un autre groupe sont rassemblées les classes qui évoluent comme les bols servant à la cuisson, Classe I, les bols rouges à bord noir, Classe II.

Dans ce premier travail, nous avons volontairement gardé des classes larges et ouvertes. Ceci n'est qu'une étude régionale qui permettra des comparaisons avec les autres sites fouillés.

Dr. Brigitte Gratien

11. — *Eléments pour une typologie de la céramique du Kerma ancien à Kerma (Soudan).*

Après les travaux de Reisner et sept campagnes de fouilles menées dans différentes zones de Kerma, nous avons le sentiment d'avoir maintenant à disposition une documentation suffisamment importante pour tenter de définir sur le terrain une stratégie d'intervention qui devrait nous permettre peu à peu de déboucher sur une classification de la céramique représentée sur notre site.

Dans la ville, la fouille menée en différents points, au sud et à l'ouest de la Deffufa, a permis de mettre en évidence une distribution de la céramique selon une stratigraphie horizontale, les éléments les plus anciens se trouvant au centre de la zone construite, les plus tardifs à la périphérie.

L'étude de la nécropole apporte un plus grand nombre d'éléments bien que la vision topo-chronologique obtenue nous paraisse encore très simplifiée.

Pour affiner les schémas évolutifs que nous connaissons, nous disposons de diverses méthodes. Si nous considérons que la nécropole s'est effectivement développée du nord au sud, nous pouvons tenter de retracer l'évolution de la céramique en effectuant un simple comptage des traits récurrents représentés dans les différents secteurs fouillés.

La comparaison des courbes de pourcentage ainsi obtenues permettra d'établir des sériations qui, avec l'apport d'indices chronologiques, serviront à définir une typologie. Les possibilités offertes par l'usage de l'ordinateur sont tentantes mais les résultats souvent peu convaincants, en raison d'un manque de précision dans les objectifs. Depuis quelque temps cependant, des études portant sur des zones géographiques limitées débouchent peu à peu sur de nouvelles réflexions. Les fondements d'une problématique régionale sont déjà mis en place au Soudan et les travaux menés à Kerma représentent un élément d'une démarche qui tend à se généraliser.

Beatrice Privati

12. — *Pottery from the Excavations at Arad* (Ruth Amiran).

Cette communication a remplacé celle sur la Céramique du Gash Delta du Dr. Rodolfo Fattovich qui n'a pas pu être présent.

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