Eichenholzplatte in alter Art zu entwerfen. Drei Generationen später begann man auch in Nordfriesland, wie ein schönes Mangelbrett im Flensburger Museum beweist[21] (Abb. 8), die linienhaft abstrahierten Symbole zugunsten einer bildhaften Darstellung dessen, was man aussagen will, zu bevorzugen. Die Eichenholz-Fischbein-Schachtel des Walfischfängerkommandeurs Peter Lohrens wird zu einem der seltenen Anschauungsbeispiele in der Endphase jener höchst altertümlichen Symbolkunst, deren Anfänge sich in das Mesolithikum[22] zurückverfolgen lassen.

21. Mangelholz HCP 1799, Insel Röm. Im Städtischen Museum Flensburg, Nr. 1231.
22. Siegfried Lehmann, Bäuerliche Symbolik. Versuch einer Genese und Systematik. *Symbolon* (Basel-Stuttgart), 6 (1967-1968), S. 72-106.

GRITH LERCHE

Research on Agricultural Implements and the History of Field-Structure

Since the Neolithic Age cultivating the earth has formed the basis of the existence of a great many people. Consequently it is not surprising that several research-workers since 1600-1700 have devoted time to the implements with which the yield of earth is produced, and the systems of the fields where the crop grows. Researchers like Walther Blith, Andreas Berch and Chr. Olufsen will be remembered for their classic works in this field.

The most important implement was the plough in various models with or without mould-board. The source of the history of the ploughing implement stretches geographically from China to the coast of the Atlantic and in time from old Babylonia, Egypt and Crete to the tractor plough on the prairies of the new world-America. During the past 150 years impulses have travelled to and fro between Europe and America in a way which from a methodical viewpoint calls for an examination of this interesting interplay before it is too late.

Some of the most important sources for the history of ploughing implements in prehistoric times and the Middle Ages are in the Danish museums. From P. V. Glob's "Ard og plov i Nordens oldtid" the following ancient ard-ploughs can be mentioned: Døstrup, Donneruplund, Trollerup, Nørre Smedeby I and II (all of them the *Bow-ard* or *Spade-ard* type) and Vebbestrup, Hvorslev, Sejbæk and Nysum (all of them the *Crook-ard* or *Triptolemos-ard* type). To these must be added both prehistoric ard-shares and also some later finds, particularly the ard from Hendriksmose and the ard-beam from Mammen. Among the ploughing implements from the Middle Ages: Tømmerby, Andbjerg, Linå, Villersø, Onsild, and an interesting plough-beam from Navndrup, dating back to 1220, must be mentioned. It therefore follows naturally that the study of prehistoric ploughing implements has become an important object for Danish cultural research and this was the basis for the first international congress on the study of ploughs, which took place in Copenhagen in 1954.

At this congress 36 scientists representing 13 countries decided to support Axel Steenberg's suggestion of establishing a permanent secretariat, intended to serve as a link between scientists from different countries working with research on the history of ploughing implements. Since 1954 the International Secretariat for Research on the History of Agricultural Implements has become a reality. It was established in close co-operation with the National Museum of Copenhagen and Axel Steensberg has since then been the head of the Secretariat supported by an international committee of which Professor Sigurd Erixon, Stockholm, was the president. Until October 1st, in 1959, inspektør cand. mag. Peter Michelsen has undertaken the daily work, and after this date, museumsinspektør mag. scient. George Nellemann took charge of the work until September 1st, 1966, when the present author took upon as secretary.

The main purpose of the Secretariat is to facilitate contact between researchers and worldwide scientific institutions. The Secretariat corresponds with about 500 people and institutions, registered on a card index, and publishes a duplicated "Newsletter" of which 21 issues have been sent out up to now. These issues comprise among other articles descriptions of new finds, information about congresses and notes on the work of the Secretariat. This irregularly published "Newsletter" is open for printing of material from various scientists in this field.

The secretariat has established a library which mainly consists of special monographs written by scientists from all over the world. Furthermore there are archives which comprise photographs of agricultural implements from several countries, mainly in Europe and Asia, as well as surveys and drawings of prehistoric and recent implements. An accession catalogue is sent out every year. The Secretariat has issued three publications independently, viz.: I. "Research on Ploughing Implements. The Conference in Copenhagen, June 1st-5th 1954." Copenhagen 1956, and II, "Danish Wheel Ploughs. An illustrated Catalogue", Copenhagen 1959, both of them written by Peter Michelsen. III. A photographic reprint of Paul Leser's "Entstehung und Verbreitung des Pfluges". Copenhagen 1970.

ALTHOUGH RESEARCH IS NOT THE PRIME CONCERN of the Secretariat, Peter Michelsen has registered the Danish wheel-ploughs. He has moreover published an important article in *Budstikken* 1958, concerning "den sjællandske krog", the latest Danish symmetrical ploughing implement in use. Unfortunately it has not so far been possible for the Secretariat to cover all aspects of various research projects which have taken place, to show new ways and means, to take up new problems and to establish itself as a consultant for scientists within its sphere, but this was mainly due to lack of personnel and economic funds. This however has been overcome as the Royal Danish Academy of Sciences and Letters in the autumn of 1966 resolved to form a Commission for Research on the History of Agricultural Implements and Field Structures specially to deal with problems which the Secretariat cannot deal with. This does not mean that this contact-organ will be unnecessary. Professor Axel Steensberg is the head of the Commission of which the other members are: Professor Dr. phil. & litt. L. L. Hammerich, university lecturers Dr. phil. Fr. Skrubbeltrang and Dr. phil. J. Troels-Smith, and the writer of this article who works as a secretary for both these closely co-operating organs.

The title of this Commission implies a broader field of work than that of the Secretariat. The agricultural implements and the fields are one unity and must be studied from a functional viewpoint. In Denmark there are old traditions of working with the structure of the fields. Here can be mentioned works like Chr. Olufsen's, "Danmarks indvortes Forfatning i de ældre Tider" Det kgl. danske Videnskabernes Selskabs philosophiske og historiske Afhandlinger, Band I, 1821, a fundamental work on the taxation, use and repartition of land since the Middle Ages; Gudmund Hatt's, "Oldtidsagre", Det kgl. danske Videnskabernes Selskabs Arkæologisk-Kunsthistoriske Skrifter, II. 1, 1949 i.e. prehistoric fields in Denmark; and C. Rise Hansen and Axel Steensberg's, "Jordfordeling og udskiftning" Det kgl. danske Videnskabernes Selskabs Historisk-Filologiske Skrifter, II. 1, 1952 i.e. the distribution and reallotment of land in some Zealand villages.

The Commission has planned to undertake the registration, take photographs and in some cases make detailed measurments of the most important agricultural implements in Danish museums, a task which has commenced already. On account of the Commission a series of systematic ploughing experiments with reconstructed

prehistoric ploughs were performed in co-operation with "Historisk-arkæologisk forsøgscenter i Lejre", a new Danish research centre for historical and archaeological experiments. During the period 1967-1968 they finished an experiment with the ard from Hendriksmose which started some time ago, and experiments with other kinds of ploughing implements will follow. In continuation of the experiments published by Axel Steensberg in "Ancient Harvesting Implements" (Copenhagen, 1943) some recent experiments are carried out on sowing primitive cereals and harvesting the crop, using original or reconstructed prehistoric harvesting implements. On behalf of the Commission archaeological research work and the measuring of furrows after the ard-shares from the Iron-Age, which cover a remarkable area in a bog in Jutland, were started on July 1st, 1967.

Furthermore it is the intention to carry out experiments with reconstructed agricultural spades from 3000 B.C. as a continuation of the experiments with rope-drawn ards from the Bronze Age in Syria which Axel Steensberg has published in "Berytus", 15 (1964), pp. 111-139.

Moreover the Commission has taken the initiative of publishing a new periodical which came out in 1968 under the title *Tools and Tillage, A Journal on the History of the Implements of Cultivation and other Agricultural Processes* (ed. by A. Steensberg, A. Fenton and G. Lerche) in which articles about agricultural implements and their use can be published in English or German with summaries in both languages. There is also space for reviews and short notes. The periodical will to some extent render the duplicated "Newsletter" superfluous although this in the future will continue to publish the accession catalogue and more internal material. Moreover the Secretariat intends to publish material in the publication series of the Royal Danish Academy of Sciences and Letters but with special numbers and titles under the Commission. The first of these is "Borup Village", an atlas covering field systems in a wood on Zealand descending from the village of Borup which can be dated back to 1000-1200 A.D.. A pamphlet with text in five languages is published together with the atlas. At present there is negotiation with a Hungarian ethnologist about publishing a catalogue covering Hungarian ploughing implements with an introduction in English.

As will appear from the above information, the work of the International Secretariat will still continue on the lines marked out at the conference in Copenhagen 1954, although the problems of field structures has been included and activity will grow as a result of the financial aid which the Danish Carlsberg Foundation has now made available for the Commission.

It is our hope that the International Secretariat in Copenhagen in the future will be useful, although it has only been able to undertake some of the tasks intended in the resolution at the conference in Moscow in 1964. It is thus more gratifying that an international folklore society with Dr. Wolfgang Jacobeit in charge will make investigations which are close to the sphere of the Secretariat. Even if overlapping could occur, the Secretariat does not feel any encroachment on its interest; exchange of information would be useful and *Newsletter* and *Tools and Tillage* will be open for notes of that kind. Both the International Secretariat and the Danish Commission have their offices at the National Museum, Brede, 2800 Lyngby, Denmark.