The history of Frombork is closely connected with the fate of the Warmia bishopric. The Christianization of barbarian Prussia, achieved in a most ruthless way by the Teutonic Order, and hence forcing new political domination over the subdued nation, roused serious troubles among the local population that ended in armed riots. During one of these in 1261, fire...
spread over the locality of Braniewo, which was the first seat of the Warmia bishopric. The chapter, forced to seek a safe residence for the bishop's seat, chose the Frombork moraine hills situated over the Vistula's lagoon (fig. 1). It may be supposed that the defence values of one of them prompted the decision of building here a stronghold and cathedral. For the hill had steep slopes from the north, east and west and only from the south did it lower gently towards a flat eminence.

The exact date of moving the chapter's seat to Frombork by Bishop Henry I Fleming is unknown. However, written documents from 1278¹ mention the existence of a stronghold (castrum) in Frombork, and in 1288 they state the erection of a temple naming it "ecclesia cathedralis."² A characteristic feature of space planning of the early town, is a vast assemblage of canonries (alodia) situated outside the fortifications of the Cathedral Hill (fig. 3). Members of the chapter were settled therein before 1288.³

In 1287⁴ the town (civitas) was considered already to exist, spread over the low territory, near the lagoon, at the foot of the stronghold (fig. 3). It obtained, however, municipal rights from Lübeck only in 1310.⁵ Archaeological research has stated that the town had been localized on a "crude root" (in cruda radice) and was by no means the continuation of an old Prussian settlement. It had a regular ground plan with an outline close to a rectangle and an elongated market place in the middle. No brick fortifications had ever encircled the town, only the two entrance gateways, one called the Miller's Gate and the other the Smith's Gate, were built in masonry⁶ work. In the 14th century there existed here a parish church devoted to St. Nicolaus and in the suburbs a Holy Spirit Asylum, founded by the chapter with a St. Anne's chapel, while nearby stood a St. George's Hospice for the leprous sick.

Frombork's economic development was very slow, owing perhaps to the neighbourhood of Braniewo that had the privilege of belonging to the Hanseatic League. So the burden of keeping safeguard over the town and the canons of the chapter fell to the bishop's stronghold.

Its central and most valuable object is the vast Gothic cathedral, composed of three aisles, raised in the years 1329–1388. The fact of finishing the construction of the chancel only in 1342, indicates that till that time only a wooden temple mentioned in written sources⁷ must have fulfilled the function of a church here. Brickwork fortifications are being systematically built around the stronghold, beginning with the end of the 14th century, finished in the first half of the 16th century.⁸ At the same time a number of important architectural items were raised here, such as the bishop's palace and particular canonries inside the defence walls.

Frombork, and particularly the defence assemblage of the Cathedral
Hill, is ranked among the illustrious monuments of Mediaeval Europe. It was moreover closely linked over a number of years with Poland, owing to the eminent role that the Warmia bishopric had played in Poland’s policies during the 15th to the 18th century. Finally the names of some outstanding figures from the history of Poland’s politics and culture were linked with Frombork, which is also known as the town where had been living and working Nicolaus Copernicus, canon of the Warmia Chapter.

World War II, and particularly its final phase, brought severe destruction to the town, ruined in about 80 per cent. The cathedral suffered only slight damage, but all the buildings within the stronghold fell literally to ruin. The disastrous situation set a tremendous task before the Polish restoration service, calling for a general and careful rescue of the whole complex, knowing its high value as historical relic and the price attached to it by the nation. So the early post-war period required first of all saving all buildings from further destruction, and then a skillful reconstruction of their architectural value. So, restoration works have been applied on
a large scale already since 1961, with special attention to the approaching date, or the 500th anniversary of Nicolaus Copernicus birth.

The long-term programme of restoration works conducted on modern principles, required in the period of preparation not only numerous studies and investigations, but also the necessity of systematic excavations. This was started already in 1958, and included providing data to the reconstruction scheme of particular objects on the Cathedral Hill, and to a general advantageous planning concerning the courtyard and the surrounding of the stronghold. From 1967 the range of archaeological research expanded over the area of the outside canonries and the location

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Fig. 3. Plan of Frombork denoting regions of archaeological research and observations. (Drawn by A. Kruppé)

1: archaeological dugouts; 2: region of salvage research; 3: region of systematic investigations; 4: Number of dugouts
Fig. 4. Plan of Cathedral Hill in Frombork with archaeological dugouts marked out.

Drawn by A. Kruppé. Photo by T. Biniewski.
1: outline of walls; 2: disclosed walls; 3: line of dugouts; 4: numeral list of dugouts
town, for such was the scope of fast advancing works. So it is clear that excavations in Frombork took on a character of systematic and also salvage research, as well as the observation of digging works carried out in several spots of the town (fig. 3). The Frombork research team became therefore an important and much meaning point in the history of our late-medieval and old Polish archaeology, practising the elaboration of specific methods of complex field research, with the co-operation of historians, historians of art, architecture and building and geophysicists. It became a point of collecting experiments concerning methods of excavation and deep elaboration of rich and till now only slightly known archaeological sources from the period between the 14th and the 18th centuries.  

The programme of archaeological research on the Cathedral Hill put forward the need of finding out the earliest space plan of the stronghold and depicting all changes that it had successively undergone. At the present stage of research it may be assumed that no earlier Prussian settlement had existed on the Hill. At any rate no traces of such have been disclosed, although our dugout formed a close network (fig. 4). But the general outlook of the Cathedral Hill was very different in the end of the 13th century, than it is today. The courtyard had no eastern part, for the gorge running along it was much wider on this side, particularly in the southeast. The western part of the courtyard was also different, crossed nearly on its total length by a ravine, running between the front of the later cathedral and the tower of Copernicus (fig. 4). The latter had been erected at the end of the 14th century on the edge of a narrow moraine point. So the place chosen by the chapter was by no means a large square, but was guarded from three sides by steep slopes and ravines. In order to assure full safety to the inhabitants as well as to the serious building enterprises undertaken at that time, the territory had been cut off at the end of the 13th century, from the south by a mighty artificial moat with an average width of 15 m and a depth of some 4.5 m.

The raising of a brickwork cathedral required the simultaneous laying nearby of a cemetery, discovered by excavation. It had been placed on a rather narrow stretch of the territory, between the southern wall of the cathedral's body and the moat. Graves were found also on the north and east side along the walls of the chancel (fig. 4). The cemetery had been used up to the middle of the 15th century. The graves contained skeletons, mostly buried only in shrouds, without coffins. No grave equipment has been found.

Anthropological analysis stated that men and women were buried alike in the cemetery, and their skeletons belonged to men in 55.6 per cent and to women in 44.4 per cent. The excessive number of children's remains shows their high death rate; about 37 per cent are skeletons of
children below the age of 14. About 53 per cent of the buried individuals had hardly reached the age of 30, no individuals over 60 were found among the dead. But the type of their build and skulls was much like that of the population of Central Poland, which confirms the direction of colonization of these territories coming here from the south. This is known also from other sources.

The second half of the 15th century brought severe destruction due to the wars of 1454–1455, therefore principal changes had occurred in the space system of the Hill. Nivelaition works applied to the courtyard gave it an outlook something like the present one. The moat and the ravine on the western side have been filled and liquidated, and the eastern part raised and widened by bringing earth to a common level. The earth-and-timber ramparts are also ultimately removed, all the stronghold is encircled by defence walls. At the same time intense building is being carried out in the courtyard. Archaeological investigations managed to localize some buildings that were till now known only from documents. That was

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**Fig. 5.** Ground plan denoting architectural relics of foregate from the first half of the 16th cent., disclosed by excavation. (Elaborated by W. and J. Berezniccy and the authors. Drawn by A. Kruppé)

a: pillars supporting the bridge on the moat and the passage through the gate
the case with the inward canonry of the canon Bratkowski, disclosed under the eastern defence wall and with part of the chancery of the Blessed Virgin Mary in the north-eastern part of the courtyard (fig. 4). Contrary to the so far existing opinion, also a Gothic building has been stated under the southern defence wall between the bishop’s palace and the southern gate.

The research in the interior of the bishop’s palace, erected at the beginning of the 16th century, was very important for working out a complete architectural design of reconstruction. The use of archaeological methods allowed to state the level of the building’s use at that time and to disclose a number of architectural relics from various phases of conversions and enlargements of the building between the 16th and the 19th centuries. An interesting experience was the discovery of two well kept brickwork furnaces for central heating in the cellar. They were connected with a system of canals in the brickwork floors of the halls of the ground floor, conveying thus well heated air to the living rooms.

Research on the fortifications of the Hill included defence walls in different sections, the Copernicus tower, the octagonal bastion and all the territory beyond the southern gate. A most important fact was discovering here a poligonal brickwork foregate, known already from plans of the first half of the 19th century kept in the archive. The foregate was erected due to the activity of Bishop Maurice Ferber, intent on the reconstruction and strengthening of the stronghold’s defence in 1520, after destruction that

Fig. 6. Cross section through the disclosed outline of foregate along the north-south axis, as in 1971. (Elaborated by W. and J. Bereźniczyc and the authors. Drawn by A. Kruppé. Photo by T. Biniewski)

1: layers of the 19th cent. covering older remains; II: layers of the second half of the 17th and the 18th cent. covering earlier remains, III: earlier layers from the 15th and the beginning of the 16th cent.; IV: virgin soil
had ruined the fortress during war with the Teutonic Order.\textsuperscript{18} It has been accepted that raising the foregate had been finished in 1537.\textsuperscript{19} Comparison, however, of its disclosed remains with the mentioned plans, and T. Zagrodzki's attempted reconstruction, indicates serious divergences in some places. Only archaeological methods have allowed to penetrate the manner of building the object and laying its foundations, as well as following the phases of development of the fortifications protecting the southern entrance to the stronghold.\textsuperscript{20}

It seems certain that at the turn of the 15th to the 16th century the fortress had been safeguarded from the south by walls, strengthened by the chief gate and wide moat, with stiffly falling banks and a depth reaching 7 m. It was spanned by a wooden bridge resting on mighty pillars,\textsuperscript{21} (figs 5, 6). An additional assurance of the southern entrance was the mentioned polygonal foregate, raised in the second quarter of the 16th century. Its raising had changed the direction of the road leading to the fortress, which from that time on ran from the west along the defence wall, crossing the moat by a bridge supported by brickwork pillars, the foundations of which were found sticking in the bottom of the still existing moat. However, initially the pillars might have been made of wood, for the discovered brickwork ones seem — in the light of preliminary architectural examination — to be later than the object itself.

During the Swedish assault (1626–1629) the foregate had been rebuilt in a bigger plan, the range of which is still not exactly known. Part of the disclosed walls on the western side of the gate are connected with it (figs 5, 6). The remaining walls have been built in the 18th century and should probably have been part of the guardhouse, raised here in 1710. The Ferber foregate had been destroyed during the Swedish war in the middle of the 17th century and was never rebuilt. It had been successively demolished while putting the fortress in order after war destruction in the 1780s.

In connection with the 500th anniversary of Nicolaus Copernicus' birthday, astronomers and geophysicists suggested undertaking the research by archaeological methods in order of find the great scientist's observatory, placed somewhere outside in the open air. It should necessarily have been a well levelled brickwork floor, pavimentum, 4×4 m wide, situated in the territory of an outward canonry inhabited by Copernicus.\textsuperscript{22} Such a construction was indispensable for a steady fixing of measuring instruments, and its firmness and stability were most essential to the achieving of astronomic calculations.

Archaeological research have brought no results to solve that question. The biographers of Copernicus do not agree in the matter which of the three canons' chanceries: St. Mark's, St. Peter's or St. Stanislas', that might be considered here, could have belonged to Copernicus (fig. 3). Investiga-
tions of the two first canonries gave negative results, the third has not yet been investigated. Before starting excavation works we applied geophysical research by the electrical resistivity method.²³

Systematical archaeological work has been undertaken in the territory of St. Peter's canonry,³⁴ including thus for the first time the homestead of a farm from the 16th–18th centuries (for such can be considered the outside canonry) into an archaeological study. A big part of the total building plan from the end of the 15th to the 18th centuries has been uncovered, as well as pits for storing clay and lime used for building and repairing for construction of foundations of former farm buildings, among them a small brewery. The latter's inside contained a well kept, 3 m long, brickwork fruance from the beginning of the 16th century, adapted to the drying of hops and malt, and hollows into which long troughs for keeping malt had been pressed. It is the first time that archaeological research recognized that kind of objects. A pit for dumping refuse and dung used between the

Fig. 7. Fragment of construction of wooden houses from the middle of the 14th cent., disclosed at the back of the Main Market Place (site 3). (Drawn by A. Kruppé)

15th and the 18th centuries has been found here and electrical resistivity methods allow to assume that the inhabitants of the chancery had used a small natural hollow existing here.²⁵ An interesting thing was a steady increasing of the area of the homestead in the course of years by including and cultivating some of the surrounding territories that were formerly dunes. Our excavation works were naturally concentrated on the Cathedral
Hill, the territory of medieval town being excluded from systematic archaeological research. But recently building necessities caused the need of systematic salvage works. Their results provided a preliminary knowledge concerning the type of a Middle Ages urban planning method, and some insight into details of its range in some of the town's quarters ²⁸ (fig. 3). Extensive salvage works in the background of the roof of houses, along the western side of the market place, disclosed remains of wooden houses from the 14th and 15th centuries (fig. 7). The large quantity of daub in the modern layers allows to suppose that in later years the skeleton construction was used to the erection of buildings.

A shoemaker's house from the second half of the 14th century has been uncovered during research in the town, recognized owing to the finding of scraps of leather, parts of shoes and even whole products. There was also a barrel dug into the earth, which may have served to the tanning of hides, part of a baker's furnace and a well with wooden casing.

No less valuable than the above mentioned results of research in the area of the Cathedral Hill, the outward canonries and the town, are very rich archaeological mobile sources from the period of the end of the 13th up to the 18th centuries. Their substantial worth decidedly exceeds the territorial frames of the Frombork assemblage and also those of Warmia and Mazury, perhaps because the latter have not yet been subjected to archaeological research. Another factor increasing the value of Frombork's archaeological sources is the exceptional continuity of settlement from the 13th to the 18th centuries.

Excavations carried out in Frombork have provided information on craftsmanship and the use of its products by inhabitants of the settlement. The achievements of potters have left rich ceramics materials (figs 8–11), we have found numerous items coming from workshops of shoemakers (fig. 12), tanners, weavers,²⁷ wheelers, blacksmiths, locksmiths, glassmakers, combmakers (figs 13–16) and others. Very valuable are here rich archaeological sources concerning the 16th–18th centuries, a period still insufficiently investigated in all of the Polish territory.

Among the findings in Frombork there are also objects evidencing the circulation of money, far outreaching exchange and local trade. We have found true coins and also their forgeries, tokens used in trade transactions (fig. 15),²⁸ glass vessels coming either directly from Spanish glassworks or their Italian imitations, stoneware from the Rhineland, (fig. 8, e, g), all sorts of earthenware vessels from Dutch workshops, pipes made in boiling material from Holland (fig. 16a–f),²⁹ bottles from Great Britain,³⁰ (fig. 16 g–h) oyster shells fished in the North Sea and brought from Denmark and Holstein.³¹ The neighbourhood of Gdańsk, which had been linking Frombork and other Polish lands with western Europe is here recognizable in

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Fig. 8. Earthenware and stoneware vessels from the 15th-17th cent.

a: grey earthenware jug from the 15th cent.; b: earthenware table jug with green glaze from the 16th cent.; c: earthenware tankard with green glaze from the 16th cent.; d: earthenware table jug with yellow glaze, from the beginning of the 17th cent.; e: stoneware takard, import from the Rhineland with the image of Adam and Eve in Paradise; light-brown glaze, beginning of the 17th cent.; f: earthenware strainer, red glaze, 16th cent.; g: stoneware triplet, import from the Rhineland, 16th cent., grey tint glazed with salt; the vessels joined inside had a pitch mortar on the globe-shaped middle of each body. (Photo by J. Kruppe)
Fig. 9. Faience vessels from the first half of the 18th cent. (Photo by J. Kruppé)
a: flowerpot with perforated bottom, blue ornament on cream-coloured ground; b: coffeepot with beak, pale pink colour; c: table jugs, ornaments in blue, brown and green on cream-coloured ground; d: pot with dark brown ornament on light brown ground; e: assortment of table vessels
every step. Königsberg and Elbląg may have had a share in exchange. Fine earthenware tiles from the 17th and 18th centuries used to ornamenting stoves and other objects of everyday use, such as fine table utensils, attire ornaments and other artistic objects used by the canons in the 18th century, may have been produced by handicraftsmen of Gdańsk or Königsberg or had been imported foreign workshops (figs 10, 11).

Fig. 10. Stove tiles from the 17th cent. (Drawn by T. Bazylko. Photo by A. Skarżyńska) 

a—c: green glaze; d: white and blue glaze
Fig. 11. Stove tiles from the 17th and 18th cent. (Drawn by T. Bazylko. Photo by T. Biniewski)

a: crowning of stove shaped as bunch of grapes, from the 18th cent.; leaves painted light grey, berries gold; b, c: stove tiles from the 17th cent., green glaze; d: corner tile from the first half of the 18th cent., dark blue ornament on cream-coloured ground; e: tile plate with Mazurian pattern, blue ornament on white ground
Objects of local exchange imitating faience, were some of the table vessels: bowls, dishes, plates and jugs dug out of layers from the end of the 17th and from the 18th centuries (fig. 9). Stove tiles may have also been produced in the neighbourhood, for the nearby situated settlement of Tolkmicko \textsuperscript{83} delivered then products much like the objects found in Frombork. The acquired sources concerning food production between the 14th and the 18th centuries, have important meaning also if confronted with a European scale. Our research discovered many remains of consumed domestic and wild animals, birds, fishes and shellfish, that had been the food of inhabitants of the Cathedral Hill, the outside canonries and the town. The remains of fishes have been closely investigated, showing the consumption of those kinds that are still characteristic of fishes living now in the Vistula's Lagoon.\textsuperscript{84} They are therefore: bream, perch, roach, perchpike and pike.\textsuperscript{84} Fishing was achieved by extending vast nets, mostly in the summer season. The Frombork finds have revealed a number of fisherman's clay weights used to steadying nets and many floats made in bark. Well grown specimens (4–10 years old) were served at tables, their dimensions exceeding what is today considered the size obliging protec-

Fig. 12. Present replica of male's and child's footwear from the middle of the 14th cent., found in a shoemaker's house in the Main Market Place.
(Made by B. Kamiński. Photo by T. Biniewski.)

tion. Oysters coming from western Europe were eaten only by the inhabitants of the stronghold and outside canonries, for their shells are found only in those regions.

Notwithstanding the long period of research devoted to Frombork, we do not consider all problems of a vast set undertaken by the team of archaeological workers to be satisfactorily solved. Our investigations did
Fig. 13. Metal artefacts from the 17th and 18th cent. (Drawn by Krzepkowska. Photo by T. Biniewski)

a, b: iron table forks fitted in horn; c: small iron fork fitted in bone; d–f: iron penknives clasped in bone fittings; g: ornamented iron grip of trunk or chest, 17th cent
Fig. 14. Metal and bone artefacts from the 14th–18th cent. (Drawn by J. Krzepkowska. Photo by T. Biniewski)

a, b: brass fittings that were put on the corners of books, 16th cent.; c: brass book fastener with Gothic letters from the 16th cent.; d, e: combs in bone with fittings joined by copper rivets from the 14th (e) and 18th (d) cent.; f: weaver's comb in bone from the 14th cent.; g: bronze knob from the 18th cent.; h: iron lancet (a cosmetic device) in bone fitting from the 18th cent.; i: bronze pin from the 18th cent.; j: sculptured bone fitting (fragment of inlaid work?) from the 18th cent.; k: part of bone toothbrush, French product from the 18th cent.; l: copper thimble, 18th cent.
Fig. 15. Fragments of spoons and coins. (Photo by T. Biniewski)

a: fragment of shank and bowl of ornamented bronze spoon from the 17th cent.; b: tip of shank of ornamented tin spoon from the 17th cent.; c: bronze small medal from the 17th cent.;
c: Nuremberg token from the end of the 15th cent.; e: Nuremberg token from the years 1580–1691
Fig. 16. Impressions on imported meerschau pipes (a–f) and on bottles (g–h) from the 18th cent. (Photo by T. Biniewski)
not manage to include equally all parts of the object designed for penetration. The lacks are most keen in respect to the location town, for its standing in respect to the eminent position of the stronghold with its dignifi inhabitants is still not well cleared. Therefore, the interdependence of particular premises: fortress, canons’ homesteads, town — in reference everyday life and economy, are still waiting to be determined in such a measure as Frombork deserves it.

NOTES

1 Codex diplomaticus Warmiensis, I, 92, will be further quoted as C.D.W.
3 C.D.W., I, 135.
5 Ibidem, I, 154.
6 Scriptores rerum Warmiensium, I: J. Plastwici Chronikon, p. 61.
7 The latest elaboration of the phases of building and space system concerni the Cathedral Hill has been presented by T. Zagródzki, Warownia we Fromborku jako katedralne założenie obronne [The Stronghold of Frombork as a Defensi Cathedral Grouping], “Kwartalnik Architektury i Urbanistyki,” Vol. XIV, 1969, N 3/4, pp. 181–270; all the so far published literature on the subject is found there.
10 Archaeological research conducted by the authors had been undertaken owi to the initiative of the Conservator of Ancient Monuments for Olsztyn Voivodsh Lucjan Zubielski, M.A. The expenses were covered by the Department of Culture of the Voivodship People’s Council in Olsztyn with the co-operation of the Institute of History of Material Culture, Polish Academy of Sciences, in Warsaw.


13 On the state and research problems of this branch of Polish archaeology cf. J. Kruppé, Archeologia późnośredniowieczna i staropolska. Wybrane zagadnienia [Selected Problems of Late Mediaeval and Old Polish Archaeology], "Kwartalnik Historii Kultury Materialnej," 1973, No. 4, pp. 633–653.

14 Achieved by Dr Andrzej Wierciński from the Warsaw University.

15 Cf. Zagrodzki, op.cit., fig. 19.

16 Ibidem, p. 211.


19 Zagrodzki, op.cit., p. 247.

20 For a closer discussion on the subject see Gajewska, Kruppé Dotychczasowe wyniki....


23 For a discussion on the results of this research see W. Stopiński, Frombork, Mons ante castrum — 1666, "Komentarze Fromborskie," 1970, pp. 135–149. The results of architectural research on the building are presented by Z. Nawrocki, Kanonie zewntrz murów obronnych we Fromborku [Canonries outside the Defence Walls at Frombork], ibidem, pp. 117–119.

24 For a detailed description of the results see Dąbrowska, Kruppé, op.cit.

25 Stopiński, op.cit., p. 140.


27 Expert evidence of fragments of woolen tissues from the 2nd half of the 14th century excavated during research was accomplished by Dr Adam Nahlik from the Museum of the History of Textile Industry at Łódź.

28 Evaluation of all numismatic findings has been achieved by Dr Stanisław Suchodolski, Cft., "Komunikaty Mazursko-Warmińskie 1962," No. 4, p. 832; idem, Frombork, pow. Braniewo [Frombork, Braniewo District], "Wiadomości Numizmatyczne," 1972, No. 1, pp. 43–44.

29 A proof of the above are inscriptions on some of the copies, for instance Gouda
30 Fragments of bottles with seal on the neck and inscription "London" below the rim have been found in layers from the 18th century. We find notions of importing bottles from England in the 18th century in S. Gierszewski, *Statystyka żeglugi Gdańska w latach 1670–1815* [Statistics Concerning Sailings from Gdańsk in the Years 1670–1815], Warszawa 1963, Table 5. It may, however, be admitted that bottles found in Frombork had been manufactured in Polish factories, after the model of forms imported from England. Professor Z. Kamieńska drew our attention to such a possibility, for which we express here our hearty thanks.

31 Shipments of oysters were coming at that time to the port of Gdańsk also from France, Holland, Lübeck and Sweden. These were, however, only sporadic cases, Cf. Gierszewski, *Statystyka...*, Tab. V.


33 Expert evidence has been achieved by Dr Andrzej Prejs from the Hydrobiological Department of the University of Warsaw.

34 The fishing and consuming of eels should also be taken into account, no traces, however, of their consumption have been found in excavated osteological material, which is easy to understand.