

State of affairs at Rijckholt

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In 1969 and in 1975 international symposia on flint have been organized by the Limburg branche of the Dutch Geological Society.

Today we have assembled for a third symposium of which the first was initiated by rather longlasting excavations of prehistoric flintmines between Rijckholt and St. Geertruid, south of Maastricht.

There are connections between the excavations and this Symposium, but let us first look at Rijckholt itself.

In 1881 a Belgian, Marcel de Puydt from Liège, discovered neolithic sites in a wood on the eastern slope of the valley of the river Meuse, south of Maastricht, between the villages Rijckholt and St. Geertruid.

In 1887 he discovered a large oval shaped basin of 54 by 37 meters. The floor of it was covered by a layer of flintwaste of over one meter thick. Later this basin became known as the "Grand Atelier". The amount of flintwaste in it is estimated more than 1250 cubic meters. The surface area of which the Grand Atelier is a part has been examined thoroughly especially by Belgian archaeologists for tens of years since its discovery in 1881.

In 1910 Prof. J. Hamal-Nandrin discovered the first prehistoric shafts and in 1914 he penetrated into some prehistoric galleries, that were situated near a gully, called the "Schone Grub".

In 1923 Dutch archaeologists discovered mines at the edge of the "Grand Atelier". Prof. van Giffen excavated here from 1923 till 1925. On the tableland of St. Geertruid he found round shapes, that he thought to be huts.

In all those years of superficial excavations thousands of finds were gathered. The knowledge of the prehistoric mines stayed modest, though it became clear that here an important centre of prehistoric underground flintmining of about 15 hectares (150.000 m² or nearly 40 acres) was situated.

Then in 1963 and 1964 Prof. Waterbolk of the Groningen university and his B.A.I. (Biological Archaeological Institute) started excavations at Rijckholt. They looked for traces of inhabitation on the plateau of St. Geertruid, which they didn't find. What they found were several round shapes of shafts.

On the edge of the Grand Atelier Prof. Waterbolk tried to examine prehistoric galleries near the excavations of Prof. van Giffen from 1923. He also found galleries but he could not really penetrate into them.

Then a group of amateurs came to his assistance. They were amateur-geologists, and, more importantly, they were interested in archaeology and they had mining experience. They formed the "Werkgroep Prehistorische Vuursteenmijnbouw", a workgroup of the Nederlandse Geologische Vereniging, Afdeling Limburg, with 12 members.

Their aim was to make accessible a strip of prehistoric mines between the Grand Atelier and the shafts that Prof. Waterbolk had located on the plateau of St. Geertruid.

For this purpose the Werkgroep made a modern tunnel or gallery of about 2 meters high and about 2 meters wide in order to follow the stratum of flint-rich chalk the Neolithic miners had exploited. This gallery was intended to be about 150 meters long. From each site 10 meters of prehistoric mines were examined.

The Werkgroep worked every Friday night. They reached their objective, but it took 10 years of hard working, rather than the estimated time of 6 months.

Let us quickly go through these 10 years.

It all began very romantically, with wooden props and wheelbarrows. But after a year the wood began to decay and had to be replaced by steel supports. A collapse in the gallery caused much delay. It took three months to advance one single meter in the gallery. But then work proceeded regularly at the front of the gallery. The prehistoric galleries we found were all filled with chalk rubble. This material had to be removed by us. It was transported to a dumping ground by means of tipcarts on rails. The winch was mechanized with a moped or motor-bicycle.

When the gallery could not be kept horizontally any longer, we had to build in a belt-conveyor, driven by a farmer's tractor with one wheel off the ground. In 1967 Prof. van Giffen visited our excavations and he saw his 1923 excavations again, from the

inside this time. He was impressed. His comment was; 'I'll dream of all this toninght.'

We found 66 shafts, all about 1 meter in diameter. The greatest depth is about 15 meters with an average of 10 meters. Rijckholt may have about 5000 shafts. At the base of one shaft we found grooves, worn into the chalk with some kind of rope cable, where the shafts ends and the galleries open inward.

Mr. C. Rademakers, member of our group studied the traces made by miners picks. He learnt to recognize places where right-handed or lefthanded miners worked.

The area mined from one pit grew bigger when the main gallery proceeded. We found the average surface area to be about 50 m².

The efficiency of the prehistoric mining was always very high and rose till more than 70% of the flint available.

If we estimate the thickness of the flintlayer to be 10 cm and if we know that the specific weight of flint is about 2.5 the yield of flint was about 250 kg per m².

The output of every pit varied from 2 till 20 tons of flint, with an average of about 10 tons.

If Rijckholt counted about 5.000 shafts, the total production from the pits would have been about 50.000 tons of flint. Estimates of the total amount of flint produced at Rijckholt go up to more than 100.000 tons.

We recorded nearly 16.000 finds. Of these about 15.000 were miners-picks. Prehistoric miners used about 10 picks for every meter of gallery. The picks must have been shafted. Maybe their conical shape is an indication that they were just put into a hole in the shaft. The place of fracture of broken picks seems to confirm this.

The picks were made on the surface. We believe that the making of a pick did not take more than 5 or 10 minutes. In the underground works we sometimes found them in 'depots'. In some cases we found them together with hammerstones, that were used for sharpening the points again and again. At first we thought that these hammerstones were round. But finds showed, that they were made by chipping slices from cylindrical pipes of hard chalk, with a percentage of 15-20% SiO₂ (silicic acid), that is found in the chalk. The disks were used as hammerstones, until they became too small. So the round hammerstones we found may be worn hammerstones.

On 8 november 1965 we found a human skull, without the lower jaw, but very well preserved. We noticed a wound above the nose and a skull fracture, both of which were healed. These wounds occurred at least a half year before his death. It is a dolichocephale skull (low and broad) of a man over forty. Could it be a ceremonial skull-burial?

We gathered a 16.000 snail-shells of 25 different species. Further we found bones from hinds, frogs, squirrels, birds and from 9 kinds of mice. And then: charcoal. Radio carbon analysis gave dates from 3150-3050 B.C.

Our main purpose was, to open a strip of prehistoric mines for further examination. So our main gallery should stay open., Our government made the preservation possible. Since the second Symposium the preservation has been completed. Preservation work was done with the aid of heavy machines. One day, in 1978, a bulldozer sank into the ground near the entry of our gallery. So we found out, that about 3 meter under the floor of the Grand Atelier there were more prehistoric galleries. The Werkgroep started to work again.

We found a number of galleries and even shafts. The work is still going on. How far the recently located mining will be extended we do not yet know; likely not under the mines that we examined with our main gallery, for the shafts do not run any deeper there. A question is: which of the mining activities is the oldest?

We have reasons to believe that the Grand Atelier was dug first. After that the mines laying underneath were exploited, followed by exploitations along our main gallery.

Further investigations will be undertaken.

At Rijckholt there are preserved excavations now, complete with a small building, electricity, water, a telephone and even a toilet for visitors. The work appears to be finished. But there is still a lot to be done:

- the reports must be finished and published by the Workgroup.
- it would be interesting to investigate the youngest mining at Rijckholt.

These investigations might unveil the reason why mining was stopped at Rijckholt. For technical reasons? For some other reason?

In future, scientists can start examining the mining area of Rijckholt along our gallery where and whenever they want. The cooperation between scientists and amateurs, working on flint, should be promoted.

The importance of cooperation between disciplines and between scientists and amateurs in different areas may become clear from the following example

The Aldenhovener Platte is an area in Germany, near the Dutch border, at a distance of about 40 km from Rijckholt. Here, in connection with the production of lignite, many prehistoric settlements have been regularly and systematically examined by archaeologists.

Our German friends Mr. J. Weiner and Mr. A. Zimmerman studied the sources of the flint-material of the Neolithic sites.

It is of great importance, that most finds could very well be classified chronologically.

The flint was classified macroscopically (by visual determination) into 10 kinds. Of the pieces that could not be classified with certainty the most probable classification was determined. Of the 25.000 finds about half was handled.

A number of chemical-physical analyses confirmed the macroscopic classification so far.

The main source of flint proved to be Rijckholt. Other sources lay in Belgium and e.g. on the Lousberg in Germany.

If one would try to estimate the need of flint on the Aldenhovener Platte he would come to some hundreds of tons a year!

It is a question by what influences the flint trade was favoured or restricted. Was it cultural reasons or the availability at the sources or was it other reasons?

It was observed, that Rijckholt-flint was dominating in the sites of the Aldenhovener Platte during the early and the middle phases of the Bandkeramik of the early Neolithic.

In the late Bandkeramik flints from other sources made out a higher percentage. After this period Rijckholt-flint reclaimed its dominant place.

It may be clear to you, that knowledge of mining-techniques and the intensity of flintmining at Rijckholt and observations as described above should be studied in close connection with each other.

- and last but not least:

a fourth Symposium should stimulate the study of flint in geology and archaeology, a study that we think is very important. It should be executed by scientists and amateurs in close cooperation.

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