

Galaxy

SCIENCE FICTION

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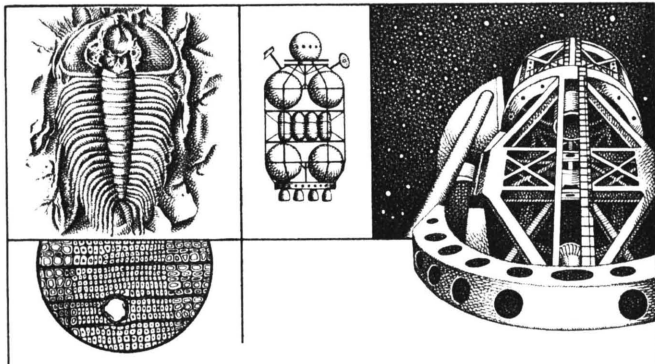
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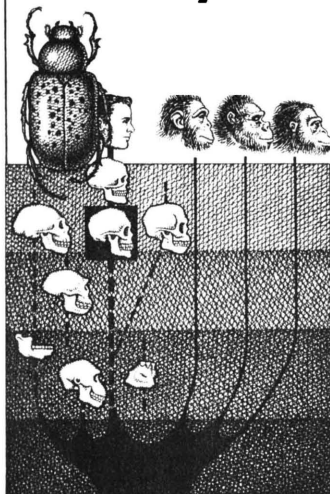
By **WILLY LEY**

**KONSTANTIN ANKLITZEN
ALIAS FRIAR BERTHOLDUS**

THE CITY chronicle of a West German city — Ulm, if I remember correctly — contains a simply wonderful entry, written by an unknown hand around the year 1380. It reads: “A knight came and besieged the town and shot at it with thunder guns. It did no harm.”

There are several things about this short entry that I find interesting.

One is that the knight who be-



sieged the town was not even mentioned by name, apparently a little siege now and then being quite commonplace. I have the feeling that this one may not have been mentioned at all if it had not been for the thunder gun.

The second interesting point is, of course, that it was the knight who sported the thunder gun and not the city. The customary explanation is that the knights were opposed to firearms as a principle of knightly honor. Though their reasoning may have been faulty, they at least allegedly displayed good judgment because firearms supposedly ended knighthood. Well, the firearms *did* contribute at a later date, when they had grown into siege guns, but even then mostly for the reason that the rich cities could afford siege guns while the knights could not.

THE third interesting point is that this ineffective shooting took place in the very year in which, according to an entrenched belief, bolstered by a load of old books and manuscripts, guns and gunpowder were invented by the monk Berthold Schwarz, who was a member of a monastery in or near the city of Freiburg in the Breisgau.

Many of the manuscripts solemnly added that "said Berthold

was executed from life to death because of his invention of this art in 1388 A.D." — after which they proceeded without noticeable scruples to teach apprentices how to purify saltpeter, mix gunpowder and cast cannon.

But when the city of Freiburg erected a monument to the inventor in somewhat belated recognition of the passing of five centuries since his deed, the City Council, after careful deliberation and much correspondence with historical societies, had the year 1354 engraved as the year of his death on the pedestal of his monument.

Since Arabic manuscripts speak of powder and of rockets more than a century before 1380, and since Roger Bacon's famous letter in which he defended himself against the accusation of witchcraft is of equal age, and since the oldest picture of what is indubitably a firearm dates back to 1326, there was evidently something wrong with the story.

Either the mysterious monk did not live at the time mentioned in the old manuscripts, or else he was simply a legend and the statement that his name had been Konstantin Anklitzen before he joined a monastic order had been invented by a local historian of Freiburg at an early time because this and similar

names were peculiar to the Freiburg area.

Whether "Berthold Schwarz" should be considered as "Man or Myth?" was quite an issue for decades among historians, especially the military variety. While his supposed native city spent money on a public monument, a Royal Historical Commission which compiled a comprehensive Biographical Encyclopedia (the *Allgemeine Deutsche Biographie*) of all famous Germans resolved not to include him as being "un-historical."

Remains of this disagreement persist to this day. In the *Encyclopaedia Britannica*, the monk, spelled Berthold Schwartz, is mentioned four times (in the articles on Ammunition, Fireworks, Guns and Ordnance), but does not have an article of his own. On the other hand, *Webster's Biographical Dictionary* lists him as a historical person, merely questioning his identity "with the Franciscan, Meister (Magister) Berthold, real name Konstantin Anklitzen."

NEITHER authority, strangely enough, points out that Berthold Schwarz (or Schwartz) cannot have been his name, whether he lived or not.

The word *schwarz* (*schwartz*) is merely the older spelling) is

the German word for "black" and in this connection it is also a mistake. The older manuscripts, both in German and in Latin, refer to him as *Berchtholdus niger*, which means Berthold the Black. For a while, this was properly translated into German as *Berthold der Schwarze*, until somebody wrote the name as Bertholdus Niger, which then produced Berthold Schwarz. This is about as correct as translating Charlemagne's Latin name, Carolus Magnus, as Charles Grand.

Since we already know that guns did exist in 1380 and that the invention, therefore, must have been made earlier, it might be best to work our way backward from that date. Several historians of the 19th century did just that — they read their way through old city chronicles in search of mention of guns.

One, a retired German colonel by the name of A. Essenwein, found several:

In 1378, a Johann von Araau made three guns for the city of Augsburg and instructed the patricians Johann Ilsung, Johann Vend and Johann Feinsbach in their use. The chronicle of the city of Speyer reported in 1374 that a gunnery master (not named) was paid a cash honorarium. The chronicle of Nuremberg for the year 1356 mentions

a payment to Master Blacksmith Saenger for guns and powder. The expense accounts of the city of Frankfurt on the Main were preserved beginning with the one for the year 1348; they show expenditures for the purchase of guns and gunpowder from that date on, but unfortunately do not tell where the guns and the powder were bought.

There were, however, quite a number of places, for the British historian John Upman established the mention of gunpowder mills for various cities: Augsburg had one in 1340, Spandau in 1344 and Liegnitz in 1348. The chronicle of Lübeck for the year 1360 states fairly calmly that the City Hall caught fire because of the carelessness of those *qui pulveris pro bombardis parabant* (who make the powder for the bombards).

Another British historian, Oscar Guttman, discovered not less than seven documents dealing with firearms for the period from 1344-1348, among them an invoice for gunpowder and an iron cannon bought by the city of Aachen in 1346, a document stating that the city of Cambrai bought, in 1342, ten cannon, "five of iron and five of metal" (bronze?) and several bills paid by the exchequer of King Ed-

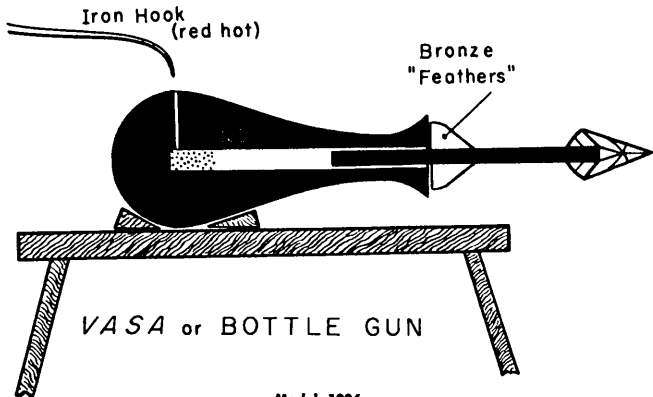
ward III of England in 1344-1347.

IN ADDITION to these more recent researches, the Italian historian Muratori stated that, in 1347, one Hugonino di Chatillon made four bronze cannon for the Marquise de Monferrato.

Another "document" is furnished, believe it or not, by an old natural history book. Konrad von Megenberg, Archdeacon of the cathedral of Regensburg, spent the two years of 1349-50 translating a Latin work by a French churchman into German. The original had been written almost precisely one century earlier and its author, Thomas de Cantimpré, or Thomasius Cantipratensis, had likened lightning to a missile from a *tormenta*, one of the old crossbowlike javelin-throwers. Konrad, the translator, changed that sentence to read: "like a missile from a shotgun" which, because of the noise, seemed to him a better comparison to lightning and thunder.

This not only proves that firearms existed in 1349, but also that they were sufficiently well known to be used for literary comparisons.

The oldest picture of a gun originated in England in 1326. A Walter de Milemete wrote a fairly short work "On the Duties



Model 1326

of a Prince" (*De Officiis Regum*) and the picture was used to fill an otherwise empty manuscript page. The gun is not mentioned in the text, but its type is known to historians. It was a so-called "bottle gun" or *vasa* (Figure 1), which fired darts.

From the picture, it seems as if the firing was accomplished by touching a red-hot iron hook to the touch hole. Since too much gas would leak around the shaft of the dart, it can be assumed that some wadding, probably leather, was used. The *vasa* must have been propped up with wooden wedges, but the drawing in the manuscript does not show this; it shows a bare wooden table. The gunner is shown stand-

ing off to one side, however, so they must have had experience with recoil.

Looking at the picture of a *vasa*, you find that the chronicler's sentence "it did no harm" becomes understandable. The wonder is that these weapons were not abandoned as soon as they had been invented, for they must have been awkward to carry around, difficult to serve, rather expensive and, of course, cursed with long intervals between shots. A heavy spear thrown by a strong man must have been more accurate and possibly more destructive, too.

The oldest report of the actual use of such guns is just one year older than this picture. The Eng-

lish, accompanied by Flemish soldiers, fought the Scots, and Archdeacon Babour of Aberdeen reported that the "crakys of war" were a novelty then. He added that they had not been used in an earlier battle in 1319, when the defenders of Berwick fought bravely, but "gynis for crakys had he [they] nane." In other words, they had no guns to shoot.

ONE very interesting fact is that the various places mentioning gunpowder during the preceding century do not mention guns. The oldest source about which there is no doubt, a Chinese chronicle, speaks of rockets and bombs on chains (and, by implication, of powder) for a war in the year 1232, without saying when these things were invented. (But a later Chinese chronicler by the name of Wuh-i-siao declared categorically that "guns came from the outer barbarians.")

Only eight years after that battle, saltpeter, the most important ingredient of powder, was known to an Arab savant with the somewhat unwieldy name of Abú Mohámmad Abdallah ben Ahmad Almalíqi. He did not mention that it was used for explosive mixtures, but the name he used is indicative — he called it "Snow from China." Forty years after

that (around 1280), another Arab, Hassan el-Rammah, still called rockets *alsichem alkhatái* — "Chinese arrows."

By that time rockets had already received documentary mention in Europe; they were used in Cologne in 1258. And written prescriptions for making powder and rockets were, so to speak, all over the place.

Roger Bacon, whom his contemporaries called with awe and some uneasiness the *Doctor mirabilis*, gave these recipes in his *Epistola*, written in 1247 or 1248. Roger Bacon still disguised the information; by way of much literary padding, he made it appear as if he were describing the making of gold or the Philosopher's Stone.

But his German contemporary and counterpart, Albert von Bollstadt or Albertus Magnus (he was called the *Doctor universalis* by his contemporaries), wrote about the same things openly. Just when Albertus wrote the one of his many works in which powder and rockets are explained is not known. One could say that, since he died in 1280, it must of necessity have been earlier than that, but precise dating is unimportant, for both Roger Bacon and Albertus had their information from an older book, the *Liber ignium* ("Fire Book").

Its author, Marchus Graecus, is otherwise completely unknown. It is likely that he was just the translator of an Arabic original that is now lost. As for dating, my own guess is around 1240; it has to be early enough for Roger Bacon to read, but it is unlikely that it was prior to the time of Almaliqui.

The point of all this is that, up to, say, 1280, we hear of powder and rockets and of occasional bombs, while the "gynis for crakys" suddenly appear in 1325 and are the main thing from then on. Evidently the invention of the gun falls into this interval of about half a century.

IT WAS around the year 1840 that an officer of the Belgian army, a Major Renard, found an entry in the chronicle of the City of Ghent. In this so-called *Memorieboek*, the entry appears under the year of 1313, but that was the fiscal year of the city, which ran from August to August. Expressed in calendar years, it comprised the second half of 1313 and the first half of 1314.

The entry reads: *Item, in dit jaer was aldereerst gevonden in Duitschland het gebruik der bussen van eenen mueninck*. In literal translation: "Furthermore, in this year was for the first time found in Germany the use of

bussen by a monk." The word *bussen* is still around in English in the word blunderbuss (originally Dutch *dunderbuss*, the first part of the word meaning "thunder") and in German in the word *Büchse*, which means a smooth-bore hunting piece.

In this entry, the genuineness and dating of which have stood up against all inspection, we find missing as well as known ingredients of the story stated in dry commercial language. The year of the invention falls into that gap. The country of origin is stated to be Germany, as was asserted about a century later by a whole raft of Italian historians, two Spaniards and one Greek. And the inventor is said to be a monk.

In the following years, the *Memorieboek* contains several entries about *bussen med kruyd* (bussen with powder) as an item of commerce and, soon after that, the King of England began to hire Flemish soldiers who had the "gynis for crakys."

It would be so nice if the gentlemen who wrote the *Memorieboek* had seen fit to mention the monk's name. Since he didn't, the name of "black Berthold" must have come from elsewhere, especially because that sentence in the *Memorieboek* had been forgotten until Major Renard re-

surrected it in the 19th century.

The main — but not the only — source for the name of the monk is another old book with a few mysteries of its own. Its title is simply “Fireworks Book” of which many manuscript are known and which was even printed later. But we are not certain who wrote it, for the author did not reveal his name. In his foreword, he said by way of apology that he had written down all these secrets “because there are so many things which every Master must know that one cannot remember all of them without writing.”

Nor do we know just when it was written. One of the oldest manuscript copies known (MS No. 1481a of the Germanic Museum in Nuremberg, if you insist on a specific reference) was made between 1415 and 1425. Since it is known that the gunnery master Abraham von Memmingen wrote a fireworks book for his Lord, Duke Friedrich of Tyrol, in 1410, it is believed that this book, of which we only know that it was written, and the anonymous Fireworks Book of which we have so many copies are one and the same.

“THIS art,” the Fireworks Book says, with reference to the art of shooting, “has been

found by a magister. His name was Magister Berthold, who was a *magister in artibus* and who dealt with Great Alchemy. . . The Magister Berthold desired to burn a gold tincture and this tincture requires saltpeter, sulfur, lead and oil, and he mixed the ingredients together in a copper vessel and after he had closed it tightly as one must do and put the vessel on the fire . . . the vessel broke into small pieces. . . Later the magister left out the oil and the lead and put charcoal into it and tried to find whether one might throw a stone that way.”

This, at first glance, looks like an entirely different story. From the sources surveyed so far, we had a right to conclude that at some time around the year 1300 somebody, identified by the chronicle of Ghent as a monk in Germany, invented the gun but did not have to invent the powder because it was already well known to literate men of the time. Now the Fireworks Book says that Friar Bertholdus — whom others called Berthold the Black — invented both and did so more or less by accident while pursuing an experiment in alchemy.

We’ll soon see that there is some sense to the story.

As for the experiment itself,

the alchemical reasoning has been clearly explained by the famous French historian of chemistry, Marcellin Berthelot. Mercury, which obviously was a very puzzling substance to people of that time, was believed by some to be the *prima materia*, the "original substance." Because it was that (I'm now quoting from Berthelot), "it had to be solidified first; that is, made solid and stable in fire like the other metals. Then it had to be colored by means of a coloring principle, white or yellow . . . so it would be changed into silver or gold."

Apparently it was believed that the "original substance," if left uncolored, would look black, for making it was often referred to as "preparing the blackness" — and outsiders to whom this term may have "leaked" called the whole thing the "black art." Hence Berthold the Black may very well mean Berthold the Alchemist.

A Swiss priest, Felix Hemmerlin (of course he Latinized his name, into Malleolus), who wrote, incidentally while imprisoned, around 1460 and who does not seem to have known about the purely military and somewhat secret Fireworks Book, told very much the same story.

Mercury, as everybody knows, is liquid because it is inhabited

by a basilisk that must be driven out. The alchemist Berthold (Hemmerlin does not mention that he was a monk, presumably because he had claimed earlier that "monks are dumb and lazy" and did not want to ruin his own argument) tried to do this first by heat alone and then by adding the sulphur, which is hot by Nature, and the saltpeter, which is cold by Nature, so that in the battle between the hot and the cold substance, the basilisk might be killed, too.

FOLK tale has it that Friar Bertholdus had studied at St. Blasien and that he received his degree there. It also says that his fellow monks were highly indignant (read: afraid) about his alchemical experiments and imprisoned him. And although he is said to have been a member of the Monastery of Thennenbach, which belonged to the Cistercian Order, he was later referred to as a Franciscan.

All this can easily be true. St. Blasien was the nearest seat of learning to Freiburg. That the fellow monks were afraid of explosions is understandable and if the prior imprisoned him, he only did to Berthold what other spiritual superiors did to Roger Bacon. Finally, since the Franciscans are a much stricter order than the



BERTHOLD THE BLACK

From André Thevet's work on lives of illustrious people, published in Paris in 1584.

Cistercians, it may well be that it was the punishment he finally received or, rather, the "pardon" — namely, to join a stricter order.

There is no documentary proof known, but the various events at least make a logical sequence. And if the story of the explosion because of an alchemical experiment is true, one may assume that Berthold quickly recognized what it was that had happened to him. He must have read the works of Albertus Magnus at St. Blasien and may even have met the *Doctor universalis* in person, for Albertus was an inveterate traveler.

A few words about dates must

still be added to this report.

The oldest document about firearms — *if* dated correctly — is an old drinking song in which each stanza tells of an improbable feat. In one, a crayfish plays on a horn; in another, a bumblebee rhapsodizes on Biblical themes; in a third, an old and toothless steer bites the heads of twelve lions off, etc. etc. One of these stanzas reads in part:

Ich sach uz einer büchsen
schliessen, daz es nieman hört
siben wachteln zerstört. . .

I can't translate this so that it rhymes, but line for line it reads:

I saw that with a bussen
shooting, which nobody heard,
seven quail destroyed

In short, everybody knew that a bussen did make noise. Now comes the difficult question of dating. The known manuscript copy was made in 1371, according to a statement on the manuscript itself. But when was it written? One other stanza reads:

The Romans already knew
that Count Konrad's
house in Freiburg is finished.

UNFORTUNATELY, there were three counts by that name in Freiburg. The first of

the three died in 1271, the second in 1350 and the third in 1422, which is too much of a spread. But the first of the three was instrumental in building a very special "house," the cathedral, which might well have been referred to as Count Konrad's house.

The tower of the cathedral was finished after Konrad's death, in 1296. The song must have been written fairly soon after that date — the completion of the building was news — probably within a decade or so. The song might, therefore, antedate the entry in the *Memorieboek* by a few years — logically so, for it was written in Freiburg, where Friar Bertholdus frightened his fellow monks.

But then where did "they" get the date of 1354 to put on the monument or 1388 when Bertholdus was allegedly "executed from life to death"?

The first one is simple. The Bavarian historian Johannes Thurmayr (who called himself Johannes Aventinus) found in Hemmerlin's book the statement that it took two centuries for Berthold's invention to become known. Thurmayr thought this too long and settled for one century; but Hemmerlin had not said from what year he counted backward, so Thurmayr counted from the year in which Hemmer-

lin was imprisoned, which was 1454. Don't be surprised at such carelessness. It was also Thurmayr who converted Black Berthold into Berthold Black.

The year 1380 came from the collective effort of a number of Italian authors. Although Muratori mentioned earlier dates for the use of firearms in Italy, most Italians were convinced that the weapon first appeared when Venice fought Genoa about the island of Chiozza. Their words *strumento nuovo trovato* (newly invented instrument) make it clear that they thought the invention had just been made; the war about Chiozza was over in 1381. And seven years later, the devil took the inventor — no, no, in 1388 A.D. he was executed.

To accomplish this, the story was told that Friar Bertholdus was offered and accepted a professorship in Prague. King Wenceslas, who ruled then, was known to be free with death sentences, so all that was needed from the point of view of the storyteller who wanted to do away with the inventor was to move him to Prague.

But when questioned in 1890, the head librarian of the University of Prague could name all the professors of that time. No Friar Bertholdus or Magister Bertholdus was among them. The story

of his execution was merely a story, just like the other story that he died in an explosion.

In all probability, he died a normal death. But we would like to know where and when.

ANY QUESTIONS?

Does any form of life exist on the Earth that is not based on carbon? I have read someplace that there is a small plant on the Antarctic continent that is based on silicon.

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You may have read this in a story without remembering now that it was fiction and not an article. There are various life-forms that utilize silicon compounds for protective spikes, etc. Some plants get rid of silicon, which they absorbed without much need for it, by excreting it. The so-called "bamboo pearls" that caused much superstitious to-do in the past are an example. But the living tissue of all plants and animals on Earth is based on carbon.

Perhaps this doesn't belong in GALAXY, but you may be able to settle a minor point of dispute.

Is there now or has there ever been a German noble family by the name of Frankenstein?

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AMEDS-Det. APO 154
c/o PM, New York*

To my own surprise, the answer is yes. There exists a family of the Barons von Franckenstein — spelled with a "c," you'll note — two members of which have made the grade of being listed in "Webster's Biographical Dictionary."

The first is Georg Arbogast Baron von und zu Franckenstein (1825-1890), who was a well-known politician in his lifetime, having been the leader of the (Catholic) Centrist Party, member of the Reichstag and, for a while, vice-president of the Reichstag.

The other member of the family was (or still is) the composer Clemens Baron von Franckenstein (born 1875) who composed several operas, *Griseldis* (in 1898), *Rahab* (in 1911) and *Li Tai Pé* (in 1920).

I don't think, however, that Mary Shelley had this family in mind when she wrote *Frankenstein*. She probably just picked a typically Teutonic name.

—WILLY LEY