

Swihart

Ken Follett

From: Daniel Starer [dstarer@researchforwriters.com]
Sent: 07 November 2000 16:34
To: Ken Follett
Subject: 2 of 3

Bernard Green.

Dear Ken,

A second copy of Foot's History of the SOE in France was mailed first class post by a UK dealer last week and should be in your hands very shortly. Please advise if it has arrived.

I have found three excellent, but quite different books about cars in the 1930s and 1940s. One is being sent to you directly by a UK dealer. The other two will be in my next Fedex package from New York.

No single book covers all the uniforms adequately. I am waiting for several books to arrive in NY and will forward them.

The head of Communications (public relations) for France Télécom sent a first batch of information last week in response to my email and translator's phone calls. My translator should get a look at the materials in a few days.

Some of the other experts and organizations have responded (see below). We should hear from additional ones in another week or so.

The first long letter below is from Stanley Swihart, head of a U.S. organization called Telephone History Institute. Although Mr. Swihart comes highly recommended as a telephone historian, I suspect some of the people with whom he will put us in touch may be more intimate with the WW2 period. Regardless, please advise how we should respond to him.

KEN: 1st email from Swihart:

Dear Mr. Starer

We have read some of Follett's books. He needs no introduction here. We wish him (and you) all the best in any new prospective book.

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Your question poses certain difficulties with geography, population distribution, and the realities of telephone systems and networks. Follett's books that we have read, generally are mostly within the realm of practical reality. So we assume he doesn't want to deviate too much from the "true facts." If this is not the case in this particular effort of his, please advise -- we can change the approach here.

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This email has a few quick preliminaries, without over much careful research. This may be enough to help Follett select among various right directions. I can always do more, if more specifics are required, but let's start here.

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1. THE BIG EXCHANGE PROBLEM

YOU WROTE

"this telephone exchange needs to be very large, and have been built in 1934."

REPLY

The only VERY large exchange that would exist in northern France would be in Paris. The second-largest, would be the Lille-Roubaix-Tourcoing industrial area, the only population center north of Paris, whose telephone demands would be big enough to have a large exchange, or group of exchanges.

And I'm sorry to disappoint you and Follett, but regrettably France did NOT have the highest telephone usage development in Europe, so exchanges

in France were, on the average, smaller than those in the more advanced European countries, and MUCH smaller than those in the USA at the same time.

In 1940, according to "official" statistical reports in our files, telephone density (i.e. number of telephones per 100 population) in France was only 3.79 in 1940, whereas in the USA at that time it was 15.85. This is number of telephones per 100 population.

In 1940 Lille had a population of only 200,000, and had only 18,566 telephones. This is NOT a large exchange. In the USA, the town that I grew up in Wisconsin then had 30,000 population, and just under 11,000 telephones. Lots more than in France. So I think Follett is not likely

*How many
switch?*

to find any VERY large exchanges in northern France, anywhere. Reims is too small to be reported in the statistical records we have, or I would have quoted its statistics instead of those for Lille, but it would not have had a very large exchange. 1940 is about the last year before the war, for which detailed phone data for Europe is available.

Paris is the only other large city in northern France which would have had a lot of phones in 1944, and our lists and maps of the Paris exchange areas show quite a lot of exchanges in various parts of the city, so most of them would be smaller, and there would be few BIG ones.

To my knowledge, Épernay would have a QUITE small telephone facilities, civilian or military.

If this is any help, Follett may be interested to know that in 1908 or some such date, a large fire destroyed the Opera exchange, then one of the largest (if not THE largest) exchange in Paris. The same building also housed the national central long distance switchboards. This one event created a big telephone disaster, similar to the type Follett is looking for, because also it largely disabled long distance calls within

France, and to other European countries. For quite some time. And all without ANY explosion. The ensuing investigation of the cause revealed that the fire started because the economy-minded French phone administration refused to pay for fuses for the electrical wiring. The fire would never have occurred had fuses been used. So penny wise,

pound foolish.

This disaster in Paris occurred about the same time as a winter of heavy rains. These flooded the Paris sewer system, thru which most of the phone cables were then running, shorting out most of the Paris telephone system. You can imagine that these TWO consecutive major disasters caused some big revisions in the way French telephone systems were managed.

Just a few years ago, the very carefully-engineered Swiss long distance dialing system had a big disaster. This caused the network to be largely re-engineered. And Zurich lost part of its phone service for a while.

Why is such a big exchange a necessity anyway? A carefully selected but critical type of smaller or medium-sized exchange could disrupt communications also. Is it enough for Follett to have big damage to communications in a smaller city or in smaller exchanges?

2. CONCURRENT DAMAGE

In 1944, Lille had mostly manual service, with local calls processed by operators, sitting at switchboards. The first automatic (i.e.. dial) exchange in the Lille area opened in 1933, but it was apparently quite small, and my notes say that by 1939, only limited conversion to dial had occurred there. This changed apparently only as late as 1945 and 1946 when two serious dial offices, probably of 10,000 lines each, opened in the metro area.

If Follett blew up the Lille exchange, he would kill a lot of operators also. In Lille maybe 100 or 200 could be on duty at any one moment. More during rush hour, very few during night time hours. Lots of innocent blood and gore. Not a good thing.

I don't think even the French Resistance would have wanted to kill and injure a lot of innocent local women, many of them under 30. That would be a no-win political situation for the Resistance.

And there were always German guards at such exchanges, so there would be resistance to the Resistance. This could be overcome certainly.

There is a second type of indirect result of ill-considered derring-do. I assume Follett remembers the Dutch Resistance aggressively blowing up a lot of dikes in the Netherlands near the end of the war, so as to flood the rail systems to prevent German reinforcement. Well, as I remember it, it may have done that to some extent, for a short time, but

it also, FOR THE REST OF THE WAR, made it very difficult for the Germans and Dutch to bring food (and other necessities) in to that area of the country. A lot of people suffered needlessly, and the war may not have been terminated much earlier. The German commander of the area had some

quite practical suggestions for the Resistance after this idiocy on their part, which were widely broadcast on radio. He warned that he could not expend short materiel and men to restore food and supplies for

civilians, which were so foolishly disrupted. Guns in holsters are sometimes better than those outside the holsters. One of my clients, an

ex-Marine, displays an interesting advertisement from the Corps, including among other things, the statement, "The Successful battle is waged first in the mind." Follett has been pretty good at this well-considered "style" of writing in the past.

A third indirect type of damage. I really can't imagine the Allies blowing up a whole city phone exchange, just to cut off communication between France and Berlin, for a short time. Had this been done, phone service would have been out for the rest of the war. Modern society would have a hard time without good communications. This would cause innocent people in that city enormous inconvenience, and for a LONG term. It could negatively affect their ability to help the Allies even,

for a long time after the big blow-up was over. (See also below.)

Maybe these above disasters might give some ideas for other ways to destroy phone operations. Destruction of just the long distance exchange would probably be more dramatically effective than of a city exchange. It could be quite spectacular. You did not provide enough information as to what Follett is looking for, so that I can help with more specifics.

3. DISABLING TRANSPORTATION FACILITIES.

Follett could blow up part of the separate (not public) long-distance telephone service of the German military, or of military-related organizations. Any such exchange however would be relatively small. Maybe not more than a few hundred phones, the equipment for which could be installed in a relatively small room or rooms. But this smaller loss

could cause massive trouble, and could be individually spectacular.

I mention this for a reason. The Reichsbahn, the German railroad system, was the first organization in the world to have a nationwide PBX, i.e.. an internal company telephone system. Before AT&T had installed its first dial exchange in the USA in 1919, the Reichsbahn had

installed the first "node" of its new national dial PBX system in Karlsruhe, in 1912. AT&T was WAY behind the Germans in this respect. To my knowledge no American organization had a nationwide PBX until after the end of World War II. As World War II expanded German control in Europe, this automatic system was extended into France and other countries west of Germany, and also into eastern Europe, like into Poland and Russia. A German train dispatcher in Paris could dial direct

to his counterpart in say Minsk, Russia, just by dialing a few codes, before the wanted distant extension number. Destroying a main switching

node on this system, could cause the Germans a lot of damage. Best to destroy selected parts in a careful selected way, to achieve maximum damage. Does Follett's plot include some competent Signal Corps staff, who have access to competent and relevant intelligence regarding German

military phone systems.

I know nothing of Follett's planned plot, but he if could disrupt this Reichsbahn system at the right exact moment to cause a maximum of confusion to the Germans, he might be able to cause as much or more disruption than would be caused by blowing up a bigger city public exchange, because of upsetting key transportation or other movements.

Notwithstanding the ideas of all too many novelists, the militaries of the various countries are never too big on destroying, in a major way, the enemy's phone systems, because the conqueror will want a good communication system too, to continue his conquests. For example, the Le Havre exchange, near the Normandy landings, was bombed out of service

before D-day. So the Brits and Americans couldn't use this for themselves, when they needed it. I have access to the May 1946 phone directory of the Allied Forces in Western Europe. This book shows that even at that late date, Le Havre apparently still had only 1,000 phones,

mostly military -- not nearly enough for a city of that size. So we caused ourselves a lot of trouble by being over-aggressive, too early.

4. BRAIN-WORK BY THE RESISTANCE

Little known in the USA, is that during the war the Dutch resistance had

a lot of success in causing confusion, error, damage etc. by manipulating the national subscriber-dialing-system so as to cause undetected trouble. AT&T doesn't talk about this sort of thing ever, because the first such service in the USA was not offered until late 1950, many years later, and then not all that much until 1955-1960. The

Dutch had begun their system in 1929 (or 1930) as I remember it. But much of their national long-distance dialing system was in place when the war started. The USA had no such service at all anywhere, at the time, so AT&T did NOT want Americans to know about this very desirable feature. The first such service in Europe had started in 1923 in Germany, and in Switzerland in 1924 (obviously NOT using AT&T equipment).

The Dutch Resistance did not overtly disable the entire national dialing system. They left it in operation. To destroy it would have caused the natives far far too much suffering, and would have revealed the extent of their activities. But they manipulated it in very sophisticated ways, sometimes shutting out the Germans when lines were actually available, or -- sometimes giving the Resistance long distance service not known to the Germans, etc. A number of techniques were used, causing lots of trouble.

One of our group has an extensive report on this activity. I would have to get the full report to copy it for you with the details Follett might need for inspiration. Actually, the author is reportedly nearing completion of a major revision to it, adding many new details, unearthed after publication of the original version, when people involved in it wrote to him adding their own stories.

Movies on this subject fail to mention that Arnhem (site of the grossly-botched Allied parachute drops) was the first area in the

Netherlands to have long-distance dialing by subscribers.

Unfortunately for Follett, France had only a very few of these systems before the war, but I know of none of them in northern France. There was one in the Normandy area, and a fairly large one in the French Riviera, before the war. If this is of interest, the reports I have on these are in German and in French. I know of nothing in English.

The best reports on the Reichsbahn's nationwide dial system for the railroad, were generated by British MI 6.

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YOU WROTE

By doing so, they totally disrupt telephone communications between the German High Command in Berlin and German forces in northern France. For

purposes of the plot, this telephone exchange needs to be very large, and have been built in 1934.

REPLY

Why does the exchange have to have been built in 1934????????????? Pray tell??

The German military was already planning for extensive alternate routings of the German long distance system, in the middle 1930s. Germany would have had a national long-distance dialing system in the 1930s also, except that the Military would not allow it, fearing that in

the event of extensive bombings, the dial equipment could not provide enough alternate long distance routings, to allow wide alternate options

should this happen. The feeling was that the live military operators would make more imaginative on-the-spot, instantaneous alternate routings -- thus more critical calls would go thru when needed. So they

vetoed expansion of national dialing from those areas that already had regional dialing.

The important message for Follett in the above paragraph, is that the Germans were certainly not dumb enough to have designed long-distance phone systems, where phone service could be totally disrupted, between Berlin and/or Paris, by one single disruption, for any length of time, between any two or more points, of any distance. In small areas yes. But NOT between very distant points. Most younger people are unaware of

how long distance operators re-routed calls when wanted circuits were busy -- this must have happened 100,000 times every day in the USA in those days. Total disruption from one disaster -- MOST unlikely -- even

in the 1930s.

And if phones were out, there was always radio to send critical messages, and in the worst case air couriers. An attack on the [phone system would have to be carefully planned, to prevent the Germans from implementing their alternative counter-measures. In some cases, could these efforts help the plot?

If Follett wishes to have a discussion of realistic disruption planning,

with possible revisions or modifications of his plot, so as to have the most plausible -- meaning to me the best story material -- sequence of events, that would probably not take too many minutes. A little pre-publication research might prevent later post-publication embarrassment, should his fictional scenario not be really "effective"

As I say, it wouldn't take much discussion to make it truly effective, and at the same time probably spectacular.

Somewhere in the available archives are maps of the French long distance phone network in the 1930s, probably the late 1930s. This should be close enough for your purpose, because not all that much changed during the war, except to be destroyed. The Allies of course imposed their own military networks, but I assume the Resistance would not be blowing up Allied networks.

I think we need to be aware here of the law of unintended consequences.

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YOU WROTE

We need to find information on typical French telephone exchanges in 1944, including plans, illustrations, and descriptions. We need to understand how small quantities of explosives placed at carefully chosen locations in the telephone exchange building, could successfully destroy the circuitry.

Could you please advise where and how we could find such plans, illustrations and descriptions, and which historians we should contact? I am already in touch with the Director of Communications at France Telecom.

REPLY

I could probably put you on to some retired telephone people in France, or in the UK or USA, who might have a better memory of these things than people born after the war, who probably now serving in the telephone administration, or of historians.

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YOU WROTE

In a key part of the novel, members of the French Resistance successfully sabotage a large Nazi-controlled, telephone exchange in a small town like Epernay, near Reims.

Bad bad. Very poor wording. It is inconceivable that the Nazi party controlled any such exchange in France. To be a Nazi one had to be a member of the NSDAP, Hitler's political party. By definition, in this sense, all Nazis were party members. But many soldiers and technical staff were not Nazis. But Follett (and you) would be right in saying it was German-controlled. Just not Nazi-controlled. The words Nazi and German are definitely NOT interchangeable.

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YOU WROTE

Anyone offering significant help with this research may receive a "thank you" in the acknowledgments section of Mr. Follett's novel, plus a signed copy when it is published. We are also willing to reimburse a researcher or expert for their time and expenses.

REPLY

I am overwhelmed with serious requests for information on old telephone

events. Even this small letter took a good deal of time. So a signed copy of Follett's book would be most welcome.

I don't think any further research need involve very much time (I don't have a lot of time, anyway). And I would not be the best person for much of the discussion needed to construct a gang-busters situation with Follett.

Does Follett speak French or German? Sometimes the people who know the most may not speak the greatest English, if at all. And they may be the ones to have the best suggestions and information. I speak both languages reasonably well in day-to-day circumstances, but not with great fluency.

One single person here in the San Francisco area, would have been just the right guy to resolve Follett's need. He was in the American Signal Corps in just the locations you are talking about, at just that time. Very practical and knowledgeable, and very easy to work with. He would have enjoyed doing this. Unfortunately for Follett, he died just last year. But there must be others, and I assume they would not take too much effort to locate. I do have my own contacts in French telecoms among people who are retired, and who would probably remember the specifics of what Follett wants. Also in the UK and the USA.

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I hope this helps. Lots of luck to Follett on this novel, and to you, helping him get it researched.

Stan Swihart
925 829 2728.

KEN: This ends Swihart's initial response to my email. Here is my 2nd email to him:

Dear Mr. Swihart,

Thank you very much for the large amount of time and thought you have given to my email on behalf of Mr. Follett. You certainly raise many questions we must address. I have forwarded your message to him and will be in touch again shortly.

In the meantime, if you could provide me with a mailing address, I will ask Mr. Follett to send you a signed copy of his new novel, "Code to Zero," which will be published shortly in the U.S.

Please excuse the mistake regarding "a large Nazi-controlled telephone exchange." I drafted the email to you and the mistake is entirely my own, not Mr. Follett's. Thanks for the correction.

In your email you kindly offer to put me in touch with other experts, especially those involved with communications during WW2. I would be grateful to receive information on how to contact them. I have French and German translators available here in New York who can write to or speak by telephone to anyone more comfortable in those languages.

Again, thanks for your considerable help. I understand you are very busy.

Best regards,

Dan Starer

KEN: here is Swihart's 2nd email:

Dear Mr Starer,

YOU WROTE

>> SNIP<< In the meantime, if you could provide me with a mailing address, >> SNIP<<

PO Box 2818
Dublin California 94568

If mailing from outside the USA be sure to add USA in large letters below this address. Mail to us from abroad often goes to Dublin, Ireland, without this major country identification.

[KEN: Could you please air mail a signed copy of Code to Zero as I promised Mr. Swihart? Thank you]

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YOU WROTE

In your email, you kindly offer to put me in touch with other experts, especially those involved with communications during WW2. I would be grateful to receive information on how to contact them. I have French and German translators available here in New York who can write to or speak by telephone to anyone more comfortable in those languages.

REPLY

Within the next few days, I will attempt to contact several people who should be able to be more specific as to the technical, engineering, building construction and layout etc. issues of such a situation. Some of these people travel on business and may be not be immediately available, tho within days or a week. Many are retired, which means they are often on vacation. If time is an urgent problem, please advise, so more vigorous steps could be taken to contact them.

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ADD-ON TO PRIOR EMAIL

There may be a good option as to the location of any such explosion, if we can go a little farther north -- into eastern Belgium. I don't know

whether this change of venue would help Follett achieve more verisimilitude, because you have not provided enough specifics, but . .

He might want to consider using the exchange at Liège, Belgium. It certainly does not meet the VERY LARGE criterion that Follett has, but it was at least a dial exchange in 1944, and this would greatly reduce the number of injuries and deaths, if some or all of the staff could not

be evacuated before the big event. Dial offices had about 10% the number of switchboard operators on duty, as would be the case in a manual system. And with either system, there were equipment men in the dial switching room, fewer men with a dial office. Again, night is the

best time for the event, because there would be a minimum of both types of people in the building. Probably only one man in the switch room at night.

I have not had a moment yet to find and look at the maps of the European long-distance network of that time. Maybe Liege was not a big trunking point on the continental network. I don't think Lille was either, or Epernay, etc. I hope to be able to do this in the next two days.

The Brussels exchange was of course almost VERY LARGE (for the time). Phone numbers there in January 1945 had six-digits. But again because it was a large city, any one telephone building would hold only part of the equipment, so this may not help much. And if he used Brussels, Follett could be stretching public credulity because some knowledgeable people would remember that the Brussels exchanges did NOT blow up. I assume some critic would pick this up. But probably very few people know whether or not the Liege exchange was blown up. Many probably don't even know that there is such a city, tho it is one of the larger cities in Belgium. It used 5-digit telephone numbers in 1946.

Stan Swihart

KEN: Below are other responses to my letters and emails. I'm not quite sure how this response relates to French or German communications equipment:

As a collector of telephone switching equipment I find the idea disturbing to contemplate.

During WW-II and subsequent years the US Army published a series of technical manuals on the operation of SXS dial telephone exchanges. I have on file TM11-2100, July 1950, which explains how the equipment operates.

A year or two ago I learned that this is one of three consecutively numbered manuals, 2101 & 2102. One of the two others in the series describes demolition methods to prevent reuse by advancing enemy troops. I must admit that I shrank from purchasing it for the relatively minor amount at which it was offered because I really did not want to see what it contained. No doubt other copies are out there to be found.

Steph Kerman

KEN: one of my emails was forwarded to a telephony historian in Australia who responds:

Hello Daniel,

A bit of background and a few suggestions.

To disable an exchange for a short time it would be relatively easy to destroy the main distribution frame where the cables came into the building or to blow up the battery banks to destroy the power supply. However

when
the Germans bombed and severely damaged many telephone exchanges in London,
it took only a few days for the British technical staff to restore the service. The Germans would have been equally efficient.

The German army in France during WWII did not make much use telephones for long distance communications because such links were poor and insecure. Orders between headquarters and sub-units were largely in the form of encrypted 'telegrams' sent by teleprinter over land lines. These links could not be intercepted. The German airforce also used teleprinter links over land lines but made more use of radio than the army. Their communications security procedures were very lax compared to the those of the army.

If units were moving or land lines were not available then the signals were sent by radio. This radio traffic was subject to interception by the British 'Y' Service and was decrypted at GCHQ, Betchley Park.

The German army was well aware of the vulnerability of land lines and the danger of concentrating communications in single points. Consequently they duplicated their facilities. They used radio where necessary so it would not have been possible to totally disrupt communications between the German High Command in Berlin and German forces in northern France by taking out a single telephone exchange.

The SOE working with the French Resistance made many covert attacks on the land lines to disrupt the links and force the Germans to use radio. In the main the damage to lines and associated equipment had to be made to look accidental because the German would have taken severe reprisals on the French population if they suspected deliberate sabotage. The RAF also bombed communication centres located by SOE agents. There was a carefully planned programme of disruption executed just prior to D-Day. Again the aim was to force the Germans to use radio.

The area where phone links were used was the railways. This was run by a semi-civilian German organisation in conjunction with the French authorities. The system was monitored by the French Resistance for information on the location and movements of the German forces especially after D-Day. This information was passed to the RAF to select targets and the critical delay to the redeployment of the German armoured forces to Normandy is the best example of the effectiveness of this work.

There is lot of information on the work of the SOE and the French Resistance. The SOE has an association and a Web site with a lot of historical accounts. There were so many brave men and women who actually did amazing things and often died in the process that it seems rather silly

to invent a fiction that was not possible.

Regards,
Andrew

KEN: another response:

I lived in various parts of Germany and worked for a telephone manufacturers design facility. War time communications were of interest.

>From long stretched memory. Sabotage of cables to exchange buildings was seldom effective as new over ground cables could be installed very quickly. Cables in remote areas where access to repair was difficult were the best targets. Minor bridges that carried cables over a river were frequent targets.

Many Germans, members of the German resistance, gave their lives in the task of disrupting the war communications.

Gas was often used to "clear out rats from the larger cable tunnels" whether these included the human type of resistance rat is not known.

Whether it happened isn't known but the contamination of an equipment room with flour or other dust blown into the air would cause a vast number of failures in calls.

Salt from the canteen put into the acid of the exchange batteries produced fumes which could require the building to be cleared and the acid replaced.

The Germans had many alternative routes laid in so taking out one centre would only have a short term effect. Noted that an exchange took a direct hit from an HE and while the civilian phones were dead until after the war the army phones network were back in operation within hours.

A cut cable would sometimes have an field exchange placed at the cut end and an operator to put the most important call from that cable onto a line in a hastily laid field cable to the nearest working exchange. The use of two field exchanges and field cable was used to bridge gaps in major cables while a new cable was laid in.

Bernard Green
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[end of email 2 of 3]