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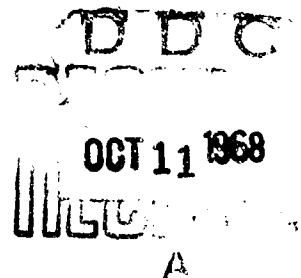
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DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

GEOGRAPHICAL-STATISTICAL EVALUATION OF
ANTHRAX IN THE GERMAN FEDERAL REPUBLIC 1954-1963

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In this report we want to describe the geographic distribution of anthrax among domesticated animals over the past 10 years within the territory of West Germany, on the basis of statistical data. To illustrate the situation more clearly, we have prepared a map; the geographic unit for this map is the Kreis [county] map of West Germany. The statistical data were taken from the official epizootic reports (Tierseuchen Berichte; published by the Federal Minister of Nutrition, Agriculture and Forestry, Subsection for Veterinary Affairs); the figures relate to the new cases of anthrax reported from communities in the particular Kreise [counties].

Brief Bibliographic Survey on the Statistical Reporting
and Geographic Distribution of Anthrax in Germany

The first statistical data collection on anthrax cases among domestic animals in Germany took place in 1886 (Schult, 1941). According to Wiemann and Francke (1928), the number of cases kept increasing until 1915 and then dropped quite abruptly in 1919. In 1886, 2,907 animals in the then German Reich had become sick; by 1914, the figure was 7,181 animals on 5,624 farms. The increase in (reported) anthrax cases until 1915 is to be tied in particularly with the increasing reporting due to gradual introduction of the payment of a remuneration [indemnification] for animals that died of anthrax. The rapid decrease in these cases in 1915 and later on coincides with the start of the war and with the termination of imports of certain foreign raw materials (wool, skins, hair, bristles, and bones from animals which had contracted anthrax) as well as fodder (particularly spore-containing bone meal as an additive to hog fodder).

In 1919 we had the lowest epizootic figure with 743 reported anthrax cases; after that the number of cases increased again when imports of foreign epizootic material were resumed; the figures kept increasing and reached a

level of 2,607 in 1928.

In 1886, when the soil was contaminated almost exclusively by inadequate cadaver removal, the actual anthrax regions as such were located in Schleswig-Holstein, Silesia, Posen, and West Prussia, in the Erzgebirge [Mountains] and in some parts of Upper Bavaria. In 1914, it was mostly the hog-fattening Bezirke [districts] of Northern Hanover and Holstein which were contaminated because a larger volume of foreign fodder was used there. In 1919, these new epizootic regions had almost disappeared completely and we once again come back to the original anthrax regions, although to a smaller extent (Wiemann and Francke, 1928). Starting in 1923, anthrax occurred in increasing numbers along rivers, downstream from tanneries which processed foreign skins; this was particularly true along the Stor, Pinnau, and Kruckau in Holstein, along the Niers [River] in the Lower Rhine region, the Vils in Lower Bavaria, the Eger in Swabia, as well as the Schutter in Baden. But these diseases decreased even there, after the various river bed improvement projects.

Between 1929 and 1938, the Regierungs Bezirk [government district] Schleswig was the most heavily contaminated district in pre-1938 Germany. Here we might mention above all the Kreise of Steinburg, Rendsburg and Pinneberg (Schult, 1941). In 1933, Zschiesche (1935) reported that a total of 714 animals had contracted anthrax on 532 farms in 496 communities in what was then the German Reich. After a drop in these cases during World War II, we once again registered an increase in anthrax cases during the 50's, primarily in Schleswig-Holstein and Lower Saxony. Lutje (1953) and Piening (1958) assumed that the cause was probably to be found in the spore-containing foreign Kraft [energy] fodder. The rather worrisome increase in sporadic anthrax cases of unexplained origin in various districts throughout West Germany, where there had not been any anthrax for many, many years, was finally also pointed out by Zetzl and Kauker (1959).

Geographic-Statistical Evaluation of Anthrax Cases in West Germany, 1954-1963

As we look at our anthrax map (Figure 1), we see, first of all, that the "old" contamination regions in Schleswig-Holstein continue to exist here, with the rural districts of Rendsburg, Plon, Steinburg and the districts to the East, as well as the regions in the rural counties of Grafschaft [earldom] Hoya, and Grafschaft Diepholz, which are right next to the heavily contaminated Lower-Saxonian district of Oldenburg. In our 10-year contamination statistics, these regions were surpassed only by the Württemberg rural district of Goppingen, which is thus numerically in the number one position in the territory of West Germany, in terms of reported new anthrax cases (Table 1). The pertinent official veterinarian in Goppingen determined the sources of these cases to be located in a turf field, in the practice of fertilizing with clear mud from the waste waters from two leather factories, as well as a wool and hair spinning plant which, among others, also processed foreign shearing goat [sheep] hair and camel hair. The refuse, called hair dung, was used by many farmers as fertilizer. After the practice of releasing hair dung for agricultural uses was stopped, the last anthrax case

from that source occurred among the cattle herd of a rancher who had composted the hair dung for 5 years but who had then fed the beets, which had grown on this dung, to his animals (Richter, 1963).

TABLE 1
NUMERICAL ORDER [SEQUENCE] OF ANTHRAX-CONTAMINATED DISTRICTS
IN WEST GERMANY (MORE THAN 10 NEW CASES IN COMMUNITIES IN
THE DISTRICTS INVOLVED, 1954-1963)

Göppingen (Baden-Württemberg)
Rendsburg (Schleswig-Holstein)
Plön (Schleswig-Holstein)
Steinburg (Schleswig-Holstein)
Oldenburg i. O. (Niedersachsen)-(1)
Kleve (Nordrhein-Westfalen) (2)
Rees (Nordrhein-Westfalen)-(2)
Segeberg (Schleswig-Holstein)
Oldenburg i. H. (Schleswig-Holstein)
Wolfenbüttel (Niedersachsen)-(1)
Ahaus (Nordrhein-Westfalen)-(2)
(3)-Grafschaft Hoya (Niedersachsen) (1)
Eutin (Schleswig-Holstein)
(4)-Herzogtum Lauenburg (Schleswig-Holstein)
Stormarn (Schleswig-Holstein)
(3)-Grafschaft Diepholz (Niedersachsen)(1)
Stade (Niedersachsen)-(1)

Legend: 1--Lower Saxony; 2--North Rhine-Westphalia; 3--Earldom; 4--Duchy.

In addition to the abovementioned major contamination concentration areas, we also have the North Rhine-Westphalian rural counties of Kleve, Rees, and Ahaus, as well as the Lower Saxonian districts of Wolfenbüttel and Stade; here we can include the latter among the southern connecting regions, linking up with the Holstein contamination areas.

Another thing that strikes us here is the further increase in the sporadic anthrax cases, above all in Bavaria, Baden-Württemberg, and Hesse.

As a result of this, we have rather few continuous regions without any anthrax at all. These anthrax-free, continuous stretches, can be found primarily in the Saarland, in the Lahn and Wester forest counties all the way to Kassel and -- with some interruptions -- up the Harz [Mountains], and on into vast sections of Lower and Upper Franconia and Lower Bavaria, as well as northeastern Swabia.

TABLE 2
TOTAL NUMBER OF NEW ANTHRAX CASES IN THE VARIOUS STATES
OF WEST GERMANY, 1 JANUARY 1954 -- 31 DECEMBER 1963

(a) Jahr	Schleswig- Holstein	Hamburg	Bremen	Nieder- sachsen (b)	Nordrhein- Westfalen (c)	Hessen (d)	Rheinland- Pfalz (e)	Saarland	Baden- Württemberg	Bavaria (f)
1954	12	1	1	15	24	9	7			
1955	11	—	1	26	34	3	6			
1956	14	1	1	23	31	15	15			
1957	15	—	—	18	17	10	7	1		
1958	33	1	3	29	10	16	10			
1959	19	1	1	25	24	13	10	—		
1960	52	—	1	35	11	8	7	—		
1961	17	1	—	28	13	8	1	—		
1962	3	—	2	12	15	7	5	—		
1963	7	—	—	7	4	1	2	—		
Insgesamt: (h)	183	5	10	218	183	90	70	1	197	14
Der am stärk- sten verseuchte Kreis in dem betr. Bundes- land: (i)	Rendsburg	Hamburg	Bremen	Oldenburg	Kleve Rees	Gießen	Kusel	St. Ingbert	Göppingen	Roß

Legend: a--year; b--Lower Saxony; c--North Rhine-Westphalia; d--Hesse; e--Rhineland-Palatinate; f--Bavaria; g--No data recorded; h--Total; i--Most hard-hit county in Federal State listed.

Broken down by Federal States, we find Lower Saxony at the head of the 10-year anthrax contamination statistics (Table 2), followed immediately by Baden-Württemberg, Schleswig-Holstein, and North Rhine-Westphalia. Rather surprisingly, though, we now observe a shift in new anthrax cases toward southern Germany because Baden-Württemberg and Bavaria, during the last year of our statistical survey, that is, 1963, registered the largest number of anthrax cases. On the other hand, the high point of the degree of contamination in Schleswig-Holstein and Lower Saxony (1958 and 1960) and in North Rhine-Westphalia (1954-1956 and 1959) seems to have been passed and the figures now seem to be on the downgrade.

This also enables us to report a generally observable improvement in the epizootic situation (Table 3).

TABLE 3
 TOTAL NUMBER OF REPORTED ANTHRAX CASES IN WEST GERMANY,
 1 JANUARY 1954 -- 31 DECEMBER 1963
 (AS OF 1957, INCLUDING SAARLAND)

Jahr (a)	(b) Gesamtzahl der Neuausbrüche in Kreisen der BRD 1954-1963
1954	105
1955	125
1956	132
1957	110
1958	159
1959	107
1960	151
1961	91
1962	61
1963	59
Insgesamt 1954 bis 1963 = (c)	1100

Legend: a--Year; b--Total number of new cases in West German counties, 1954-1963; c--Total, 1954-1963.

After a continual rise in the number of cases from 1954 until 1956, a year during which we registered a drop (1957 and 1959) is then replaced, in each case, by a year revealing a rise (1958 and 1960). Since 1960, we have had a constant decrease in the total number of reported anthrax cases in West Germany, down to the very lowest level in 1963 (59 cases). The highest epizootic contamination figure within the period covered by this survey can be found in 1958 (159 new cases reported) and 1960 (151 [new cases]). The total number of officially registered new cases in the communities of West Germany, from 1954 until [illegible -- 1963] was 1,100.

Now we might also say a few words about the seasonal development of anthrax cases over this 10-year period (Table 4). It was found that most of the new anthrax cases were reported (456), during the period covered by this report, in the course of the first quarter, from January to March. Then came the second quarter, from April to June, with 278 cases; it was followed by the 4th quarter, from October to December, with 224, and finally we have the 3rd quarter, with 142 new cases. So much for the 10 years from 1954 until 1963, as covered by this report. But Francke and Goerttler (1930) were also able to determine the same sequence for Germany for the period of 1902-1926. On the other hand, Badnjevic (1951) observed most of the new anthrax cases in Bosnia and Herzegovina during the months of May to September whereas [illegible] and Kauker (1959), after their relatively short survey of 3 years, arrived at the conclusion that most of the anthrax cases in West Germany are observed during the months of March to May.

TABLE 4
NUMBER OF NEW ANTHRAX CASES IN COMMUNITIES OF WEST GERMANY,
1954-1963, BROKEN DOWN BY MONTHS

Jahr (a)	Jan.	Febr.	März (b)	April	Mai (c)	Juni (d)	Juli (e)	Aug.	Sept.	Okt. (f)	Nov.	Dez. (g)
1954	13	12	6	8	13	6	8	6	6	8	8	11
1955	21	16	18	25	7	2	4	4	4	6	6	12
1956	11	7	18	19	17	13	9	5	6	6	9	12
1957	13	13	17	10	11	10	6	3	8	6	8	7
1958	20	33	29	18	8	5	7	4	8	3	3	13
1959	23	16	8	4	2	8	2	6	3	9	10	16
1960	15	18	33	30	13	3	4	7	4	4	10	10
1961	20	13	14	9	4	1	2	4	6	5	8	5
1962	3	3	10	7	7	4	4	2	1	6	5	9
1963	6	11	8	6	7	1	1	2	6	2	3	6
Insgesamt: (h)	153	142	161	136	89	53	47	43	52	55	68	101
	1. Vierteljahr = 456 (i)			2. Vierteljahr = 278 (i)			3. Vierteljahr = 142 (i)			4. Vierteljahr = 224 (i)		

Legend: a--Year; b--March; c--May; d--June; e--July; f--October; g--December; h--Total; i--Quarter.

Summary

Evaluating our anthrax map of West Germany for the 10-year period from 1 January 1954 until 31 December 1963, we found the following:

1. The major contamination areas where we have anthrax were to be found, during the period of this report, in Lower Saxony, Baden-Württemberg, Schleswig-Holstein, and North Rhine-Westphalia.
2. In numerical order, the most heavily contaminated counties (with more than 15 new cases during the survey period) were the counties of Coppingen (Baden-Württemberg), [illegible: Rensburg, Plon, Steinburg (all of them in Schleswig-Holstein), Oldenburg i.O. (Lower Saxony), Kieve and these (both in North Rhine-Westphalia).
3. The number of sporadically occurring anthrax cases increased above all in southern Germany. We had continuous anthrax-free areas only in some of our upland regions.
4. During the 10-year report period from 1954 until 1963, a total of 1,100 new cases could be registered officially. The highest contamination figure was registered in 1958 with 159 new cases in the communities of West Germany. Since 1960, we have had a constant drop in the number of annually reported anthrax cases. The lowest level was reached in 1963 with a figure of 59 new cases. Most of the new anthrax cases in animals occurred, in terms of seasons, during the first quarter, in the numerical order of March--January--February.

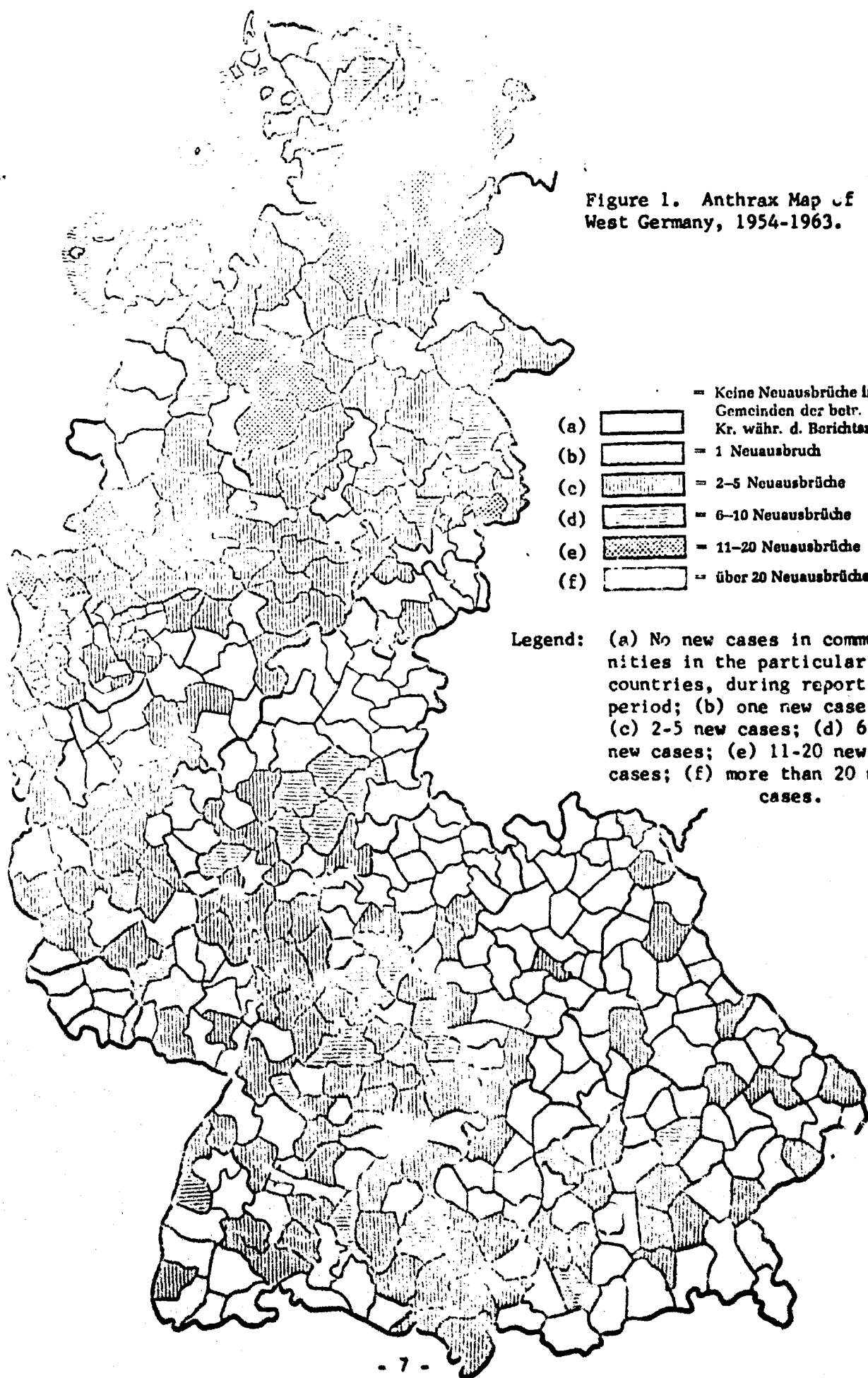


Figure 1. Anthrax Map of West Germany, 1954-1963.

- (a) = Keine Neuausbrüche in Gemeinden der betr. Kr. währ. d. Berichts.
- (b) = 1 Neuausbruch
- (c) = 2-5 Neuausbrüche
- (d) = 6-10 Neuausbrüche
- (e) = 11-20 Neuausbrüche
- (f) = über 20 Neuausbrüche

Legend: (a) No new cases in communities in the particular countries, during report period; (b) one new case; (c) 2-5 new cases; (d) 6-10 new cases; (e) 11-20 new cases; (f) more than 20 new cases.

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