

Are UFOs a New Kind of Natural Phenomenon?

by

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1. MUFON-CES

The Mutual UFO Network – Central European Section (MUFON-CES for short) was founded in 1974. Members of the group are open-minded in regard to the origin of UFOs. They are convinced, however, that UFOs represent real objects in the sky, which cannot be identified. The group presently numbers 75 active members in Germany, Switzerland, and Austria. Membership is by invitation only and is terminated if active participation drops below a certain level.

MUFON-CES membership now includes 25 natural scientists from industry and from two Max-Planck Institutes, and 6 professors from different universities. Among them are 15 physicists, 4 mathematicians, 3 chemists and mineralogists, 3 biologists, 1 archaeologist, and 4 amateur astronomers. In addition, there are 27 engineers from computer and aerospace industries, 1 psychiatrist, 2 psychologists and hypnotherapists, and 5 medical doctors and dentists. Finally, 2 scientific photographers, one of them the director of an institute for scientific photography, 7 journalists, and the head of a detective bureau belong to our organization.

Our chief aim is to elevate the discussion of UFOs to a level of serious scientific inquiry. For this purpose it is essential to stimulate interest in the topic among the scientific community. We do not officially engage in public information campaigns. (There are exceptions, such as the publication in April, 1992, of my book *The State of UFO Research*, v. Ludwiger 1992, in German).

Papers presented at our annual meetings are worked out in detail, and most of them are published in the form of Conference Reports. Each volume contains anything from 200 to 500 pages. So far we have published a total of 10 MUFON-CES volumes with more than 3200 pages of German text.

UFOs should be studied from both physical and psychological points of

view. Until now, however, only physical examinations can be conducted with a sufficient degree of objectivity and free from contradictions.

It has been possible during field investigations to identify many UFOs "in the broader sense" (as we call them), such as hot air balloons, planets, luminous ammunition, unmanned aerial vehicles, search-lights of landing airplanes, and others. Altogether we have investigated more than 80 UFO sightings. In several cases we could enlist the help of a professional medical hypnotist and of psychologists and psychiatrists.

Following Rutledge (1981), we divide all UFO observations "in the stricter sense" into two phenomenological classes:

- A) Objects of metallic appearance and construction, and
- B) Objects consisting of luminous zones without physical structure (nocturnal lights).

A question still under discussion is whether luminous paranormal appearances, such as the Fatima vision, should form a class C of their own.

Class A objects appear to be guided by intelligent beings. However, since occupants do not discuss their origin with us, one is compelled to deduce it, as far as possible, from the observed behavior of UFOs and from investigations of physical traces.

As a consequence, we have concentrated our efforts on an investigation of the physical aspects of the phenomenon and to a lesser degree on the psychological reactions of witnesses. This does not mean, however, that we have neglected the latter: a number of reliable studies have been concerned with data evaluation and credibility analysis of witnesses.

Throughout our work special emphasis has always been placed on scientific methods of inquiry. The correctness of our methods could be demonstrated by applying them to the interrogation of witnesses and to the theoretical treatment of problems. A procedure should be termed unscientific or pseudo-scientific only if the method employed is wrong, and not, as argued by professional skeptics, because it is applied to "strange" phenomena.

One result of our studies showed that there indeed exist unified field theories of matter and gravitation capable of providing at least qualitative answers to the problem of the origin of UFOs. The implication is

that from a purely astrophysical point of view the extraterrestrial hypothesis cannot be excluded, provided the theories are verified by experiments on elementary particles.

Physicists have long been searching for a complete and consistent field theory, uniting quantum theory and gravitation. The theory should be comprehensive enough to theoretically interpret a number of old facts and new discoveries in those fields which at present are either incompletely understood or completely unexplained. In the author's opinion, the solution of the UFO problem is intimately connected with the discovery of the correct quantum theory of gravitation.

The most promising theories so far, uniting quantum theory and general relativity, seem to be the superstring theories. On the other hand, these theories have been unsuccessful in their attempts to predict the unified mass spectrum of elementary particles. For this reason physicists of MUFON-CES prefer the 6-dimensional unified quantum geometrodynamics of Burkhard Heim (1984, 1989).

In the new concept of the universe arising from that theory the existence of unidentified flying objects and their properties no longer seem as unbelievable as in the framework of our present 4-dimensional space-time world. This is discussed more fully in the article *Basic Ideas of Burkhard Heim's Unified Field Theory* in this volume.

After analyzing the spectrum of sightings we reached the conclusion that solid objects, physically interacting with their surroundings, are at the core of the UFO phenomenon. Luminous phenomena like nocturnal lights – even though much more frequent than daylight discs – as well as paranormal light effects such as psychological projections according to C.G. Jung are borderline cases, which should be attributed to UFOs only after thorough investigation.

When asked in 1983 what he thought of UFOs, Franz Josef Strauss, then government head of Bavaria and former Minister of Defense, now deceased, answered:

"I am still generally distrustful of UFO observations. Personally, I think that UFOs are meteorological phenomena like fireballs or ball lightning".

Clearly, this interpretation of UFOs only fits class B observations.

Class B objects could be a form of natural energy, manifesting itself in space under certain conditions. This class of objects may well be a

newly discovered kind of natural phenomenon, formerly known as will-o'-the-wisp and falsely attributed to burning swamp gas. True swamp gas accounts for only a small fraction of light phenomena.

Swamp gas consists of methane and results naturally from the decay of biological matter in marshy areas. Certain atmospheric conditions cause it to ignite spontaneously. Balls of light (BOLs), on the other hand, frequently appear over stony and dry areas, and hence cannot be due to swamp gas. BOLs are exceedingly stable, having lifetimes of an hour or more. This is quite different from the lifetime of ball lightning, which only lasts from a few seconds up to perhaps one minute. BOLs disappear suddenly, only to reappear and to pulsate, with pulses growing alternately longer and shorter, until the lights vanish altogether.

Michael Persinger (1977) of Laurentian University, Ontario, and Paul Devereux (1982) of Wales, have independently proposed theories relating events beneath the earth's surface to the appearance of BOLs. There is no question that some kind of correlation exists, for the appearance of "earthquake lights" is a confirmed fact, even though the process responsible for producing them is not understood. According to Persinger, tectonic stresses due to geological pressures, eventually giving rise to earthquakes, are responsible for luminous phenomena leading to reports of UFO sightings.

Devereux's statistics suggest the existence of a higher than average number of UFO observations from areas with an above average number of geological fault lines. If this hypothesis is correct, it could be utilized to predict future outbreaks of UFO sightings.

Balls of Light frequently display what observers consider an intelligent behavior. Hillary Evans writes (1985):

"While it is easy to dismiss this as an 'experimenter effect', it would be unscientific to ignore a dimension of the phenomenon which could tell us something about its nature."

The reason for a general lack of interest in the phenomenon may be due to the fact that the so-called "earth-lights" seem to interact with the human mind (Rutledge 1981, Devereux 1982, Havik 1987, Sterly 1987, Long 1990). That property no longer belongs to natural science but to psychology.

As mentioned above, we are mostly concerned with Burkhard Heim's 6-dimensional unified field theory. One prediction of that theory is the spontaneous creation of energy bursts in space. These energy quanta

are projections from higher dimensions into the 3-dimensional space perceived by our senses. Each burst carries an energy of about 500 kWatt h. Such energy flashes could manifest themselves in the form of balls of light (class B UFOs) or of vortex motions in the atmosphere. They may be able to interact with the human mind because both they and our thoughts extend into the 5th dimension, where they can establish a resonance interaction. The 5th dimension is an organizational coordinate and in some sense corresponds to Sheldrake's morphogenetic field (Sheldrake 1985).

2. Refutation of Some Prejudices Concerning UFOs

Some important facts concerning UFOs should be made clear, since they are not generally known to the public or to the scientific community. Most scientists are too busy to derive information on borderline science from sources other than newspaper articles. For this reason their knowledge of the field is no better than that of journalists. Investigative journalism, normally required in all areas of reporting, usually is absent when applied to topics whose study is not financially supported.

The resulting types of incorrect press reports have given rise to a series of prejudices in the scientific community, which I should like to analyze in some detail. Following is a list of the most frequent assertions made by organized skeptics and uninformed scientists regarding the properties of UFOs. While refuting these claims, I shall, at the same time, describe the most important properties of the phenomenon.

Assertion 1: *Believers feel that UFOs are extraterrestrial spaceships.*

In our experience, observers of UFOs want to know what they have seen. Almost no one claims to have seen a spaceship.

There is no convincing evidence to justify the assumption that unidentified flying objects are extraterrestrial spacecraft! All that scientific investigators know is that the phenomenon exists, and that it is not explained by the psycho-sociological behavior pattern of witnesses caused by the physical interaction of UFOs with their surroundings.

This leads to the conclusion that UFOs are real, physical objects. Some scientists believe that lights in the sky have a natural origin, and that electromagnetic fields accompanying UFOs are capable of influencing the human mind in the sense of modifying our ability to perceive

things (Persinger and Derr 1990, Devereux 1990).

Other scientists are of the opinion that the appearances are paranormal in origin. UFOs might be projections of psychic images in the sense of C.G. Jung, or projections from parallel space-time worlds into our world (Vallée 1990).

Other conjectures are that UFOs are time machines, coming here from our own future (Meckelburg 1980).

At a Chicago meeting of 53 UFO experts in 1976 only 18 scientists declared that they would prefer the extraterrestrial hypothesis as an explanation for UFOs. 28 preferred other theories, and 7 were without opinion.

As long as research is restricted to private scientific investigations without the benefit of official financial support there is little hope of finding a satisfactory answer to the question of where UFOs come from. Nevertheless, a great deal is known about their properties.

Official financial support might well be forthcoming if the interest of politicians could be aroused. When asked if the UFO phenomenon should be investigated scientifically, Franz Josef Strauss replied:

"An agency commissioned by the Federal Government for the purpose of investigating UFO observations is conceivable and would be sensible and purposeful. Such a study group should work in close cooperation with air-defense organizations."

(Habeck 1983, MUFON-CES Report No. 9, 1983).

Assertion 2: *UFOs have been scientifically investigated and all details of the observations have found a natural explanation. Neither the US Air Force commissioned project Blue Book nor the Colorado Project contain discoveries of new, physically significant phenomena.*

The US Air Force project Blue Book was initiated in 1952 for the purpose of examining whether unidentified flying objects could endanger national security. The investigators were told to look for explanations but did not themselves do any investigating. The last head of project Blue Book, Captain Edward Ruppelt, wrote in 1956 that out of 4400 UFO sightings only 179 (4%) had found a conclusive explanation (Ruppelt 1956). However, by classifying cases into categories such as

"probable" and "possible to identify with..." it became possible to raise the quota of "identified" cases to 70%.

The scientific counsel for the project at that time was the astronomer J. Allen Hynek. For 10 years he tried hard to explain unidentified observations. As time went on, his attempts became less and less successful. Eventually, Hynek (1966) admitted that a residue of 10–20% of all reports remained unidentifiable. The more complete were the data and the more reliable was the report, the greater was the likelihood that it remained unidentified! Hynek called upon the scientific community to launch a study into the subject. However, in the sixties scientists no longer believed in the seriousness of UFO reports, because by then laymen and charlatans had seized upon the topic and used it to mislead the public with unfounded claims of supposed contacts with "extraterrestrials".

The first scientific analysis of the approximately 4000 UFO reports collected by project Blue Book from 1947 till 1953 was conducted in 1956 by the Battelle Memorial Institute. 3.2% of the cases were classified as "excellent", i.e. highly dependable. Applied to the roughly 12000 cases collected by 1968 this would imply that more than half of the 697 sightings then classified as "unidentifiable", or 384 cases, were "excellent" sightings useful for further scientific study (Maccabee 1977).

The first civilian scientific investigation of the UFO phenomenon was conducted in 1966 by a team of scientists from the University of Colorado under the leadership of the well-known atomic spectroscopist Edward U. Condon. The study was commissioned by the US Air Force. Under the terms of agreement the study was intended to present evidence that all UFO reports were hallucinations or misinterpretations of natural events. 59 cases were investigated, of which 33 cases remained unidentified.

Condon, in the introduction to the report covering some 1000 pages states, in conformity with the conditions of the study, that no scientific knowledge could possibly be gained from further analysis of the phenomenon (Condon 1968). However, very little of what he writes in the introduction makes reference to the work of his staff, and what he does write about it is misleading. The negative opinion expressed in Condon's summarizing remarks still is the reason why mainstream science even today remains convinced that no essential information can be derived from a scientific study of the UFO phenomenon.

The physicist Thornton Page wrote in the October 1969 issue of the *Journal of Physics* (Page 1969):

"Condon's carefully written conclusions do not logically follow from the case studies...", and: "In fact, the scientists' general refusal to take UFOs seriously may strengthen the 'new left' view that science is based more on authority than on observation and reason".

The most comprehensive critique of the Condon Report was expressed in the first issue of the *Journal of Scientific Exploration* by Peter A. Sturrock (1987), astrophysicist at Stanford University and president of the Society for Scientific Exploration (SSE): He established the fact that the very short time allotted for research to the Colorado Project obviously was insufficient to allow financing of a full-time working group. Furthermore, the project failed to develop a uniform and systematic procedure for cataloging the large number of older cases provided by the Battelle Memorial Institute from their valuable collection of data.

Assertion 3: *UFOs are mostly the result of social hysteria and public fancies. UFO witnesses in general are only found among the uneducated who are not trained to observe phenomena in the sky.*

In an extensive study of press coverage of UFOs, Strentz (1970) came to the conclusion that most UFO reports were submitted by scientists and military personnel. Between 1947 and 1950 their reports amounted to 35.5% of the total. Between 1961 and 1963 the occupations of witnesses were as follows:

In 17.2% of the cases witnesses were military or civilian pilots and flight controllers. 16.2% of the reports came from the Air Force or from Professor Hynek, 14% were reported by scientists and technicians (i.e. the most skeptical observers), and 10% were submitted by employees of other US military institutions.

Between 1963 and 1966 only about 11% of the reports came from this group of experts.

The report *Observations of Anomalous Atmospheric Phenomena in the USSR - Statistical Analysis* (Gindilis, Menkov, and Petrovskaya 1967) of the Soviet Academy of Sciences lists 135 cases in which the occupation of witnesses was known. 52% of the observers turned out to be scientists, engineers, pilots, and technicians.

Contrary to the opinion held by skeptics, only 3% of all cases proved

to be hoaxes and only 3% came from the mentally ill.

An interesting statistical evaluation of sighting reports by the French police is shown in Fig. 1.

Assertion 4: *UFO encounters mostly originate during times of crisis, when people are in quest of help from supernatural forces or from "extraterrestrials".*

No scientific sociological study so far has turned up evidence for the existence of correlations between times of crisis and an increase in UFO sightings. Increases in UFO observations in certain regions during a limited period of time are known as "flaps".

The first great flap in UFO history occurred in the USA during June and July of 1947 (Gross 1988), (Fig. 2).

In France, UFOs appeared in great numbers during October, 1954 (Michel 1958), (Fig. 3).

A flap of UFO sightings took place in Russia in 1967.

Many flaps have occurred in all regions of the world. The latest one took place in Belgium and lasted from 1989 till 1991 (Fig. 4).

Skeptics claim that newspaper articles stimulate the public into reporting an increased number of UFOs. However, a comparison between the distribution of cases collected by project Blue Book with that of reports published by Associated Press and US newspapers shows that press coverage does not provoke UFO reports (Fig. 5).

This is very clearly evidenced by a study of local press reports of UFO sightings in Gulf Breeze, Pensacola, Florida (Maccabee 1991), (Fig. 6).

Assertion 5: *Nearly all UFOs are seen from very far away.*

In 1981 the UFO catalog of Professor D. Saunders (Colorado University) contained about 2000 reports from 140 countries of cases where UFOs had left landing marks on the ground. In about 40% of these cases witnesses were less than 15 m away from the landed object (Phillips 1985), (Fig. 7).

At such close distances confusion with natural phenomena can definitely be ruled out.

Assertion 6: *No fragments have ever been recovered that could serve as material evidence for the physical existence of UFOs.*

Up till now, no UFO has come into the possession of civilian scientists, but much circumstantial evidence indicates that the Secret Service of the US Air Force recovered a crashed object near Roswell, New Mexico, in 1947, although this has never been confirmed by the US government.

Debris of unidentified objects other than satellites have, however, been collected and investigated.

From April 19 till April 29, 1990, the "Second Congress on Anomalous Phenomena", organized by the Russian Academy of Sciences, was held in Tomsk. Out of the 572 talks given, 140 were devoted to UFO problems.

A few lectures dealt with analyses of metallic fragments collected at Dalnegorsk, near Vladivostok. In January, 1986, a large glowing red sphere was seen hitting a nearby mountain. Six times it tried to rise again, but without success. In the end it burned for about an hour and developed a temperature in excess of 4000 degrees C. The only remains were small spherules composed of iron and lead and a net-like structure of quartz filaments 17 microns thick, interwoven with threads of gold. Their physical properties differed from those of known terrestrial materials (their densities, for example, were different) (Dvushilni et al. 1990). In 1991 we received a detailed analysis report from our colleague, Dr. Sergei Kusionov, of St. Petersburg University.

When unidentified objects descend near cars, the latter sometimes are covered with a white powdery substance. One such case occurred in January, 1988, in Australia.

While driving near Mundrabilla, Australia, the Knowles family reported that a UFO lifted their car off the highway and dropped it again. Subsequently, an unusual dusty substance was found to cover their Ford Telstar. An analysis revealed the material to consist of potassium chloride (KCl). The same substance was discovered on the car of a police officer who was driving near Harrisburg, Pennsylvania, at 5:25 a.m. on December 4, 1988, when a very bright object, hovering at a distance of some 40 m, made him come to a sudden halt. The object

was about 25 m long with the shape of an elongated ellipsoid and appeared to be made of a highly polished silvery material. The witness suffered a painful sunburn. After the object had departed, a deposit of a powdery, dust-like substance was found on his car. A sample was analyzed by a professional laboratory and most of it was shown to again consist of potassium chloride (Gordon 1989), (Fig. 8).

It is characteristic of UFOs that they seldom leave traces other than landing marks. Not infrequently, however, they interact differently with their surroundings and the resulting effects can be investigated.

Our data collection, published in 1978, lists about 600 cases involving 1319 physical interactions of UFOs with their environment (v. Ludwiger 1978), (Fig. 9).

The most frequent types of interaction are

1. electromagnetic	660 cases (59%)
2. high or low temperature and radiation	172 " (15%)
3. psychological	141 " (13%)
4. gravitational	101 " (9%)
5. movies, photos, and radar recordings	39 " (3.5%)

The first group includes 220 cases of cars whose engines stalled in the neighborhood of UFOs. In Saunder's data collection UFOCAT Mark Rodeghier (1988) found 422 cases of cars whose electrical circuits were affected. In 35% of the cases UFOs were less than 30 m away. The effect of UFOs on car engines decreases exponentially with distance (Fig. 10).

C. Poher and J. Vallée (1975) discovered anomalies in the measurements of geomagnetic field strengths recorded by some ground stations in France. These occurred at times when UFO observations were reported in the areas concerned. Assuming the source to generate a magnetic dipole field, simultaneous measurements of the field strength by various stations led to the conclusion that the magnetic field at the location of the unidentified object had a strength of about 300 000 Gauss (30 Tesla). This is an exceedingly strong field, which cannot be reproduced on earth on a large scale (Fig. 11).

The French space agency CNES (Centre d'Etudes Spatiales) established a division in 1977 for the purpose of investigating UFOs. It was the world's first agency officially sponsored by a national government and

charged with the study of UFO phenomena. (Now UFO research is financed also by the government of China).

The GEPAN division, now part of military research (DRET) with its name changed to SEPRA (Service d'Expertise des Phénomènes de Rentrées Atmosphériques), in their *Note Technique*, No. 16 (GEPAN 1984) published the results of an analysis of plants over which an unidentified object had hung suspended for a number of seconds. The event took place near Trans-en-Provence in 1981.

Probes of the plants, analyzed at the universities of Toulouse, Metz, Pau, and Rangouille, were found to display characteristics of premature aging. All attempts to reproduce these results by the use of heat, radioactive irradiation, or microwave radiation failed.

In most landing cases the force fields accompanying UFOs produce a great deal of heat, scorching the vegetation in the vicinity. However, in 32 events a temperature *reduction* was recorded, affecting the surroundings of UFOs as well as humans. In a few cases an increase in radioactivity has been noted (our data collection contains 22 cases), (Fig. 12).

The energetic origins of some interactions between objects and persons have never been identified. The following event took place in Delphos, Kansas, during November, 1971. A luminous object, 3 m in diameter, was seen hovering about 60 cm above ground. After a few minutes the object departed. The main witness suffered a headache and eye irritation (Fig. 13).

In the darkness the ground over which the object had been seen displayed a luminous ring. The finger tips of three witnesses who touched the fluorescent soil hurt as if they had touched dry ice (CO_2). The numbness in their finger tips lasted several days. 18 laboratories performed analyses of soil samples. They established the existence of chemoluminescence, but so far it has not been possible to identify the type of energy responsible for producing it. It does not seem to be an electromagnetic form of energy (Faruk 1989).

Assertion 7: *All photos of UFOs are blurred. No two pictures show the same shape if taken by independent witnesses from different positions.*

Today, any photo can be faked. Nevertheless, some pictures and movies have been proven genuine (Figs. 14, 15).

We own 3 video films of two groups of objects taken on August 28, 1990. Two of the films were taken from Greifswald and one from the Isle of Rügen in Germany. The objects were filmed for altogether 4 minutes by Ludmilla Ivanova, a medical doctor from Moscow. The same objects were also filmed by Vladimir Vinogradov of Nizhniy Novgorod from a position only 25–30 meters away from Mrs. Ivanova. A third video film of the objects was taken by Mr. and Mrs. Kaiser from a position near Putbus on the Isle of Rügen, about 30 km away from Greifswald. The distance from the witnesses to the objects was about 24 km. They hovered in the sky about 5–8 km north of Peenemünde (former production facility of the German V–2 rockets) and had an approximate size of 18 m (cf. Figs. 18–26 in the article *Analysis of German UFO Photos and Video Films* in this volume). It was possible to reconstruct a 3–dimensional picture from the 3 video films (see front cover).

Between November, 1989, and March, 1991, some 1500–2000 UFO sightings were reported from Belgium. Many of them were seen by hundreds of witnesses. In most cases a large triangular object was observed, displaying lights or search–lights at each corner and a red light in the center (SOBEPS 1990), (Fig. 16).

During this wave of sightings the Belgian study group SOBEPS (Société Belge d'Etude des Phénomènes Spatiaux) recorded about 900 cases in which witnesses claimed to have been less than 300 m away from the object. There were several multiple radar/visual confirmations of the UFO. On the night of March 30, 1990, a UFO was tracked by 4 separate Belgian NATO radar stations and by the on–board radar of an F–16 military plane. The F–16 was scrambled to pursue the UFO which was also seen visually by several witnesses on the ground.

Descending from a height of about 3000 m the UFO dove three times below the radar horizon of about 100 m after the radar tracking device had locked onto the target, developing an acceleration of up to 43 g. The Belgian Minister of Defense, Guy Coeme, gave permission to transfer the recordings of 3 ground stations and 2 jet radar devices to SOBEPS for further analysis.

Assertion 8: *The military establishment does not take UFO sightings seriously.*

A study of US documents obtained from secret agencies like CIA, DIA, and NSA, clearly indicates that UFOs have always been taken very seriously by the US Air Force.

During the UFO flap in Belgium, Belgian Air Force Chief of Staff Colonel de Brouwer presented radar recordings of UFOs to the press on June 22, 1990, and explained that "our defense system is powerless vis-à-vis these machines..."

With that statement de Brouwer repeated a remark made by his colleague, Colonel General I. Maltsev, Russian Chief of Staff of the Anti-Aircraft Defense Headquarters, who wrote in the *Robotshaya Tribuna* on April 19, 1990: "Terrestrial machines could hardly possess such capabilities..." (Sachastshik 1990).

These are opinions expressed by high-ranking military personnel, who probably possess more information about UFOs than civilian scientists.

When President Bush was asked by one of his campaign helpers, who was on the MUFON Board, what he thought about UFOs, his answer was: "You don't know the half of it" (Andrus, 1992).

Assertion 9: *UFO reports always repeat the same stories.*

UFOs continue to be an "illegitimate" area of study for scientists because of the Air Force's debunking policy, the ridicule heaped on observers due to the lack of tangible evidence for the existence of UFOs, and because of the negative publicity promoted by so-called "contactees", whose spectacular claims are often demonstrated to be false. The longer the scientific community rejected the subject, the more amateurs filled the void.

In 1973 a massive wave of sightings occurred in the USA. For the first time since 1947 the US Air Force officially stayed out of the picture. However, documents released in the mid-1970's made it clear that the Air Force was still carrying out investigations of UFO reports submitted by military personnel or coming from military installations. J. Allen Hynek, astronomer and former consultant to the Air Force, took the opportunity during the 1973 UFO wave to announce the opening of his "Center for UFO Studies", CUFOs, a scientific organization devoted to the study of the UFO mystery.

In addition, the new Midwest (later Mutual) UFO Network, MUFON, established itself as a leading UFO investigative organization, and the two groups cooperated in collecting data and analyzing reports.

By the end of the 1970's the study of UFOs had become more sophisticated than ever before, and a great deal of knowledge had accumu-

lated regarding patterns, effects, appearances, and traces. In 1987 Peter A. Sturrock founded the "Society for Scientific Exploration". Its technical journal, the *Journal of Scientific Exploration*, has been publishing refereed papers on UFOs and other topics in strict conformity with scientific standards.

While uninformed scientists are still puzzling over the question of whether or not unidentified flying objects represent a physically real phenomenon, hundreds of American citizens require treatment by psychiatrists as a result of conscious or subconscious encounters with UFOs. These persons show all the symptoms of classical post-traumatic stress disorders (PTSD), which can only be induced by real physical situations.

In 1989 Dr. Rima E. Laibow, a psychiatrist from New York, founded a special group within the Organization of American Psychiatrists for the purpose of investigating and treating so-called "UFO abductees". This new organization, called TREAT (Treatment and Research of Experienced Anomalous Trauma), is doing research for the purpose of uncovering the real or psychological origin of the abduction syndrome (Laibow 1990). Some of Dr. Laibow's work is described in her article *Some Clinical Considerations Pertaining to UFO Abduction Reports* in this volume.

Nevertheless, the status of UFO research in main stream science is still very much the same as it has been from the beginning.

As Richard Hall wrote in 1988, why 40 years of impressive human testimony, instrumental recordings, and physical evidence has essentially escaped the attention of science constitutes a human mystery of major proportions (Hall 1988). Human psychology may provide the answer. Or is the explanation connected with the psychology of alien intelligence?

Assertion 10: *Observations of landed craft with nearby occupants have purely psychological origins such as hallucinations.*

If UFO observations were induced by press reports the sightings would be evenly distributed all over. Actually, however, straight flight paths of objects in several cases have been pursued over many dozens of kilometers. In contrast, hallucinations or misinterpretations certainly do not spread out along straight geographical lines.

As witnessed, for example, in France during October, 1954, at the time

of flaps not only are objects of class A seen moving along straight geographical lines, but alleged landings and observation of small occupants also occur at points along such lines (Michel 1958), (Fig. 17).

The statistical probability that 5 observations of the flight path of a strange object accidentally lie on a straight line is 1.4×10^{-6} . In 1957 Aimé Michel, studying news clippings from 1954, discovered some paths defined by 6 observations along a nearly straight line.

The probability P that out of a total of n observations, m accidentally lie on a (nearly) straight line (i.e. are "orthotonic") is 1.2×10^{-8} . This result can be derived from the expression

$$P(m,n) = \binom{n-1}{m-2} p^{m-2} (1-p)^{n-m},$$

where p is the ratio of the orthotonic surface to the total possible surface. In Aimé Michel's case $n = m = 6$ and $p = 1.5^0 / 211^0 = 0.007$.

The conclusion, therefore, is that observations of strange objects made from points along orthotonic lines most likely are not hallucinations, even when they include reports of UFO occupants.

In contrast to meteors or planes, most UFOs do not follow a long, continuous flight path. Generally, they only move through relatively short distances and then disappear from sight or from radar screens. Typical flight paths could be recorded by ground-based radar stations or F-16 jet planes of the Belgian Air Force.

During the night of May 3, 1990, the ground radar of Semmerzake near Brussels registered several tracks of unidentified objects which had not risen from any airport. They moved with speeds of between 35 and 50 km/h and vanished without a trace after covering a distance of several dozen kilometers (Fig. 18).

Observers frequently described the movement of these objects as jerky. Three-dimensional representations of the paths followed by some of the objects and recorded by radar near Brussels are shown in Figs. 19 and 20.

3. What Can We Believe?

The appearance of unidentified objects affects various groups within our society, regardless of the interpretation of UFOs. These circles are

(1) the military, (2) the witnesses, (3) the scientists, and (4) the public.

1. Not only do such objects violate national air space authority, they frequently appear over nuclear weapons depots and nuclear power stations as well. For this reason they form a serious threat to national air defense systems.
2. All over the world people require medical or psychiatric care after making reliable claims of close encounters with unidentified flying objects. These victims are entitled to proper treatment, irrespective of whether their description of abductions by UFO occupants corresponds to reality or not. Clearly, the UFO-syndrome presents a problem for psychologists and psychiatrists worth investigating.
3. Science, too, is confronted with the UFO problem. Its investigative methods are the only tools available for uncovering the origin of unknown objects. Actually, though, the phenomenon is ignored by the scientific community because it is so rare and transitory that its existence is not assured. As a consequence, one cannot expect financial support for research in this field.
4. Neither the military services nor scientific institutions have so far presented convincing explanations to the public for the UFO phenomenon, whose outline appears to become increasingly clear. The feeling of not being reliably informed induces many citizens to invent their own explanations, which to them may appear convincing. The most widely held opinion is that UFOs have an extraterrestrial origin, and that extraterrestrials are here to help mankind. Some believe that actual conversations with UFO occupants can be arranged by means of spiritistic manipulations. In general, though, such "channelers" cannot produce reliable evidence to convince others of their extraterrestrial contacts.

UFO spiritists are not interested in an investigation of UFOs in accordance with scientific rules, since they believe to already know the truth. It suffices for them to meet like-minded colleagues all over the world and to exchange "revelations" of extraterrestrials on expensive, so-called "world congresses". The "loudness" of their claims misleads the public into believing that their reports elucidate the core of the UFO phenomenon. Actually, though, informed scientists consider point 4 to be irrelevant.

Neither military personnel nor natural scientists or psychologists and psychiatrists can by themselves penetrate to the core of the phenome-

non. This can succeed only through common interdisciplinary research carried out by those and other professional groups.

The literature abounds with examples of irrational statements about the appearance of UFOs by authors, including well-known names, who are not sufficiently acquainted with the full spectrum of the phenomenon.

The famous psychologist C. G. Jung (1958), for example, considered UFO appearances to be projections of the subconscious mind. He failed to take into account the physical interactions described in a substantial number of reports.

Another example is the psychologist K. Ring (1992), who assumes abductions to be purely internal psychic experiences, again disregarding the physical effects produced by UFOs which carry the "abductors".

Investigators of the research group NICAP, on the other hand, only took physical interactions into account and rejected all reports about sightings of UFO occupants (Hall 1988).

The American secret services in the past and present are interested only in the military threat UFOs may pose. Photos and films taken by military personnel or debris of crashed objects are not handed over to independent scientists.

Every abduction case should be investigated jointly by psychotherapists, natural scientists, and military experts. The task of physicists and chemists would be to detect and analyze possible traces of landed objects, while military air reconnaissance should utilize radar recordings to confirm the presence of unidentified flying objects at the time in question. Finally, psychotherapists should treat the witnesses.

Several private research groups in the USA like CUFOS, SSE, and MUFON, come quite close to the ideal of interdisciplinary UFO research, although government support is lacking and cooperation with the military leaves much to be desired. The reason, at least in the USA, may be that military research is unwilling to share knowledge with civilian scientists in specific areas of the UFO phenomenon (e.g. knowledge about a gravitational drive).

Only indirect proof of the existence of UFOs will be available as long as UFO occupants are not inclined to enter into a mutual exchange of information with us, or to let us have some artifacts. Unfortunately, indirect evidence is not enough to convince skeptical scientists of the existence of unidentified flying objects and their strange operators. On

the other hand, not all events accepted as facts in everyday life are scientific truths.

Which witnesses of UFO sightings should we regard as the most dependable? A president of the United States of America trained in natural science? Such a witness already exists! A general secretary of the UN? Such a witness, too, already exists! Perhaps a winner of the Nobel prize?... Even reports coming from groups of scientists, high military officers, politicians, and high ranking police officers, taken by themselves, have not convinced the majority of citizens of the reality of UFOs.

It is reasonable to doubt the unusual experiences of others as long as the number of persons reporting such events is small. It was Kant who suggested a criterion for judging the credibility of unusual sightings such as the appearance of ghosts: Every individual case should be questioned, but a certain credibility should be associated with the phenomenon as a whole. This is the method of statistical certainty, which should also be applicable to UFO reports.

The evaluation of statistically significant amounts of physical data and sightings of unidentified objects has introduced some structure into the heterogenous data material. An example is the large number of similar reports about sudden engine failures of cars driven by witnesses in the vicinity of UFOs. These reports are convincing evidence of the fact that some types of UFOs – by no means all – affect gasoline engines by interrupting their ignition systems, even though the hood should protect the latter from static electric and magnetic fields.

A statistical analysis of reports has shown that the operators of unidentified flying objects generally are small, gray, humanoid beings.

Finally, inferences concerning the intention of UFO occupants can be drawn from the sum total of UFO reports from all over the world.

Based on the findings gathered in 45 years of labor by scientifically trained researchers from reports of reliable witnesses and from the evaluation of measurements carried out with a variety of instruments, the following picture of the UFO phenomenon emerges:

- Unidentified flying objects are physical structures capable of transporting representatives of foreign civilizations to this planet (coming from another solar system, from a parallel universe, or from the future).

- The objects in general are enveloped by an energy field able to produce physical or psychological effects on their surroundings or on the observer. The objects can manipulate gravity.
- The occupants of UFOs commonly are described as small, humanoid beings, able to exert amazingly strong hypnotic powers on observers and strong, paranormal forces on their environment.
- UFO operators do not try to inform us about their origin or about their intentions. They do, however, seem to take a marked interest in atomic power stations and in all types of military installations.
- With few exceptions, witnesses who remember contacts with UFO occupants, either under hypnosis or through conscious recall, report that medical experiments were performed on them, apparently for the purpose of genetic exploration. These experiments with humans are done against their will and make it easy to understand why UFO operators carefully try to avoid observation.
- Our defense systems are powerless to protect citizens from infringement by UFO occupants. In view of this one can understand the government policy of withholding from the public the truth about UFOs and about the intention of their passengers, all the more since experience so far has shown that the unknown devices are not hostile.
- UFO appearances are very rare events, except during periods of flaps. There is, therefore, no need to be afraid of them, just as there is no need to be afraid of meteorite falls. However, one should be informed about their existence in order to react correctly in the event of an unexpected encounter.
- If we accept the views of Jacobs and Hopkins concerning the intention of UFO operators, we must conclude that they are not likely to establish official contact with us in the near future.
- The skeptic, who considers every challenge resulting from hitherto unexplained facts as a threat to his narrow world view, will continue to regard the avoidance of UFO occupants to communicate with us as confirmation of his belief that unidentified flying objects do not exist.
- For critical investigators there seems to be no alternative other than to try and infer new laws on the basis of the observed

physical and paranormal effects. This is an attractive exercise for all philosophically oriented scientists who find themselves confronted with a technology of the future. It is in this sense that we of MUFON-CES try to investigate the UFO phenomenon.

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CLASSIFICATION BY NUMBER OF GENDARMERIE REPORTS ANALYSED

SUMMARY OF RESULTS 1974 - 1978

CATEGORY	DEFINITION	NUMBER	%
A	IDENTIFIED	23	3.3
B	PROBABLY IDENTIFIED	153	22
C	IMPOSSIBLE TO ANALYZE	239	35
D	UNIDENTIFIED	263	38
TOTAL		678	

Certain phenomena observed in the upper atmosphere are sighted by many individuals and give rise to numerous similar witness reports. Each of these "multiple" cases is counted once only.

CATEGORIES A AND B (partial results)

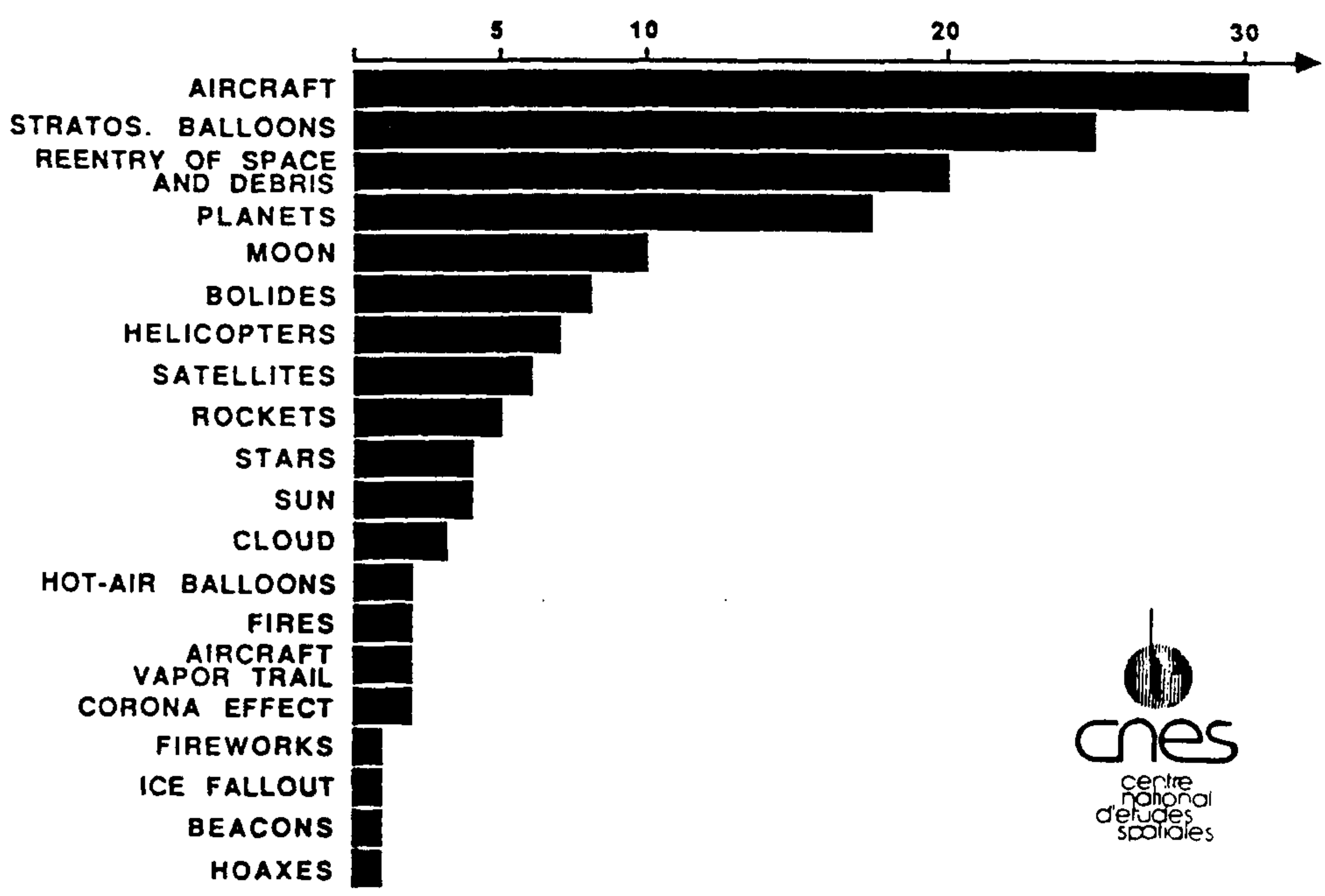


Figure 1: Classification by number of analyzed UFO reports in France during 1974 - 1978 (J.-J. Velasco, MUFON 1987 International UFO Symposium Proceedings, Washington)

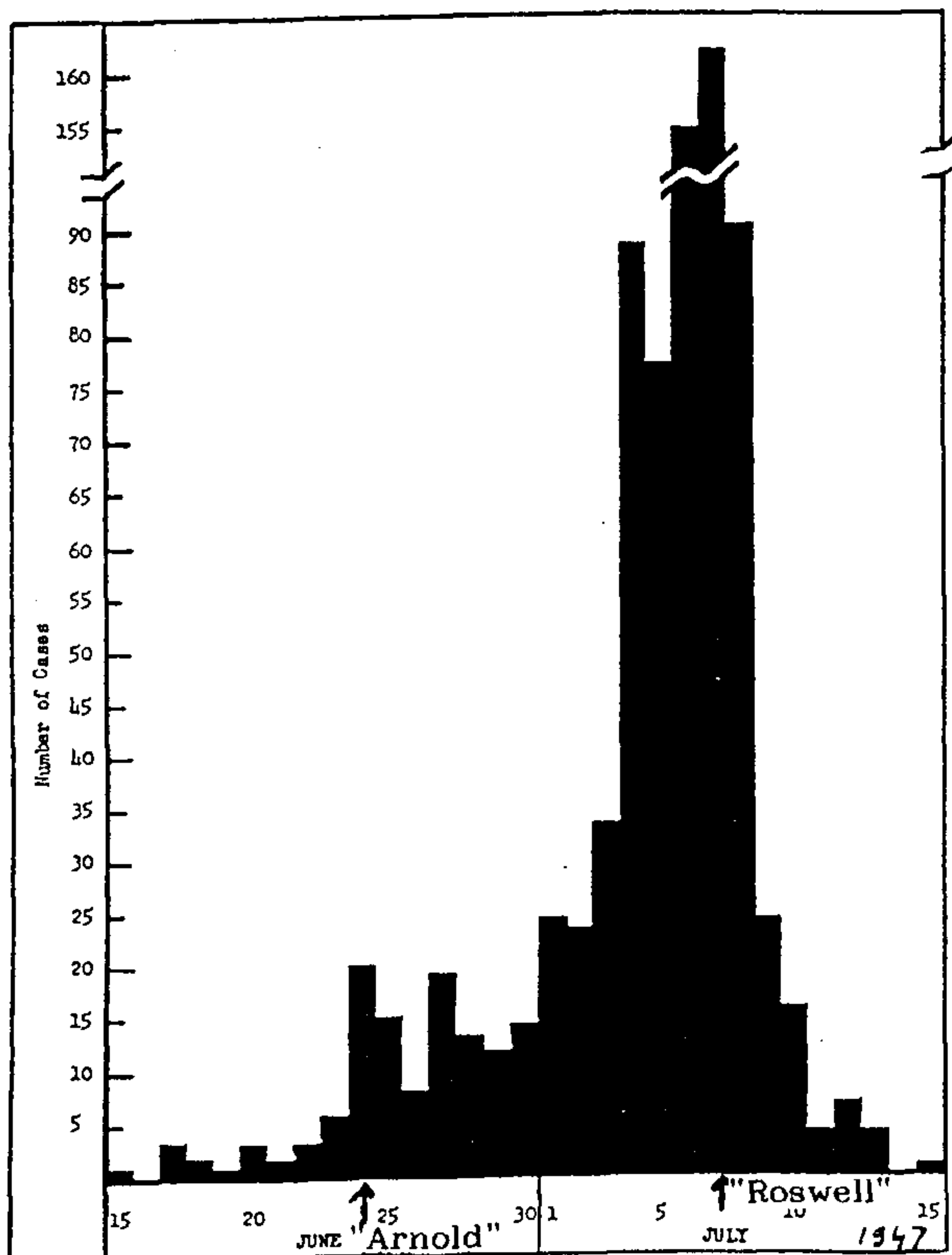
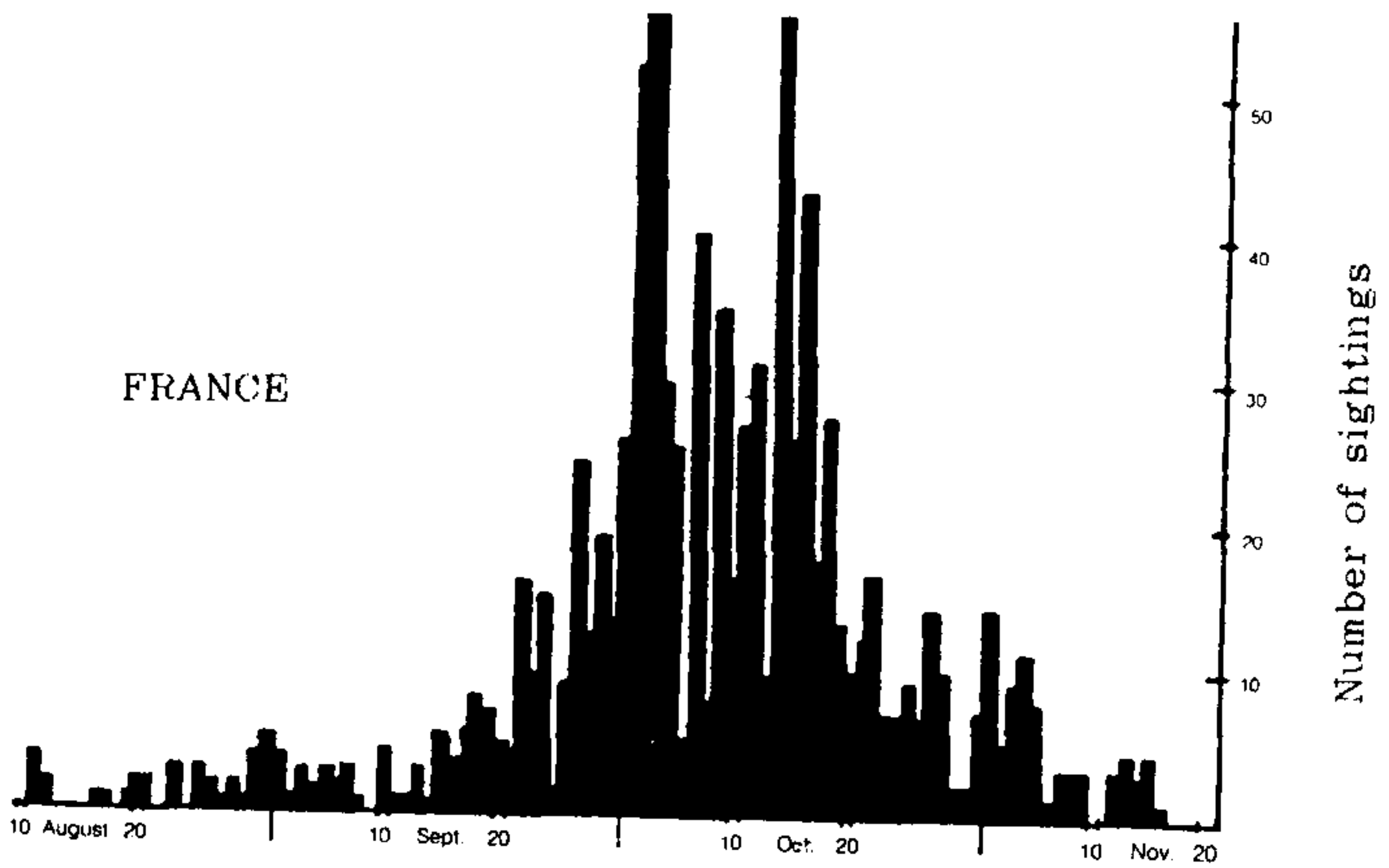
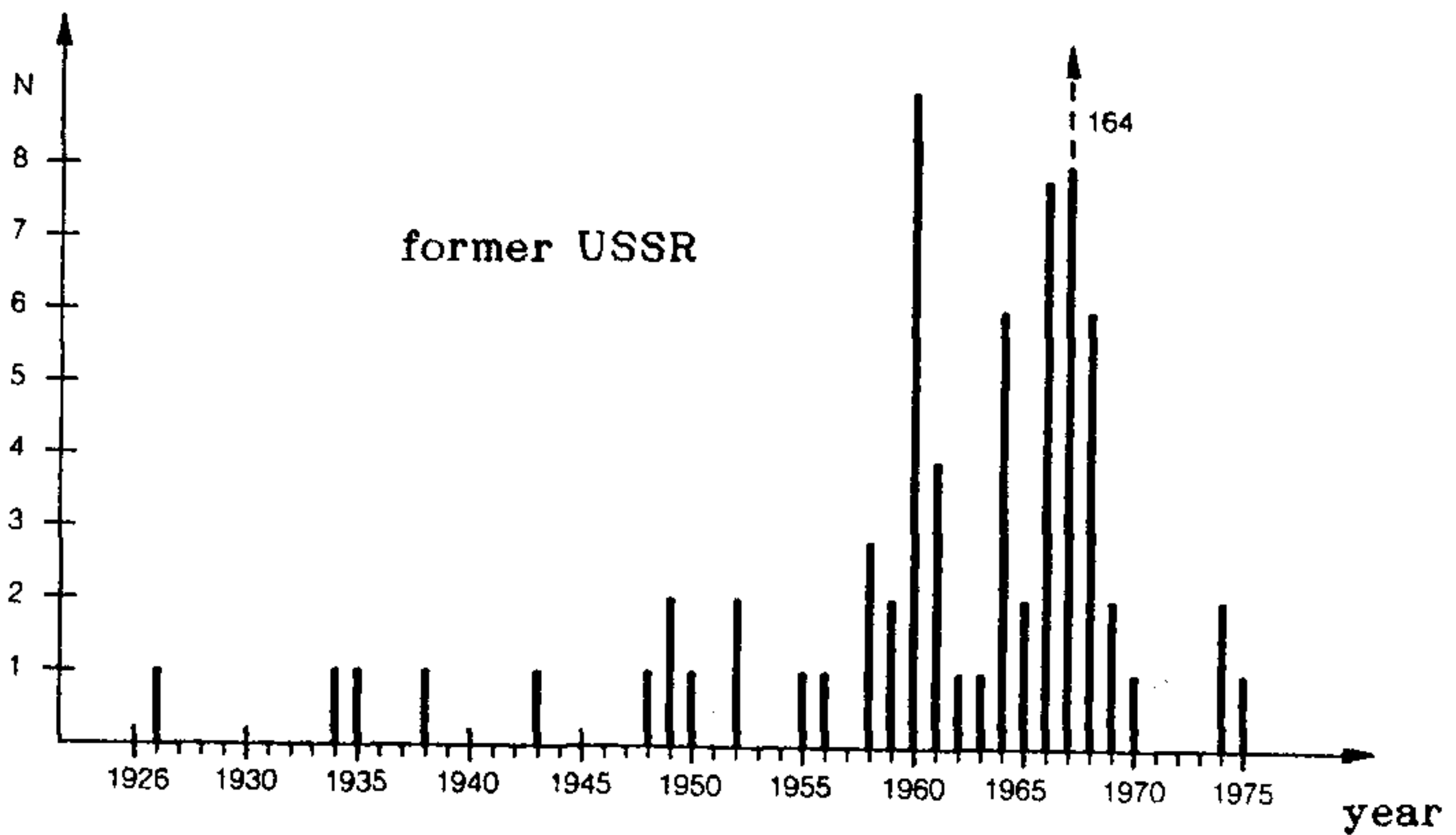


Figure 2: Distribution of daily sightings in the US between June 15 and July 15, 1947 (Ted Bloecher: Report on the UFO Wave of 1947, 1967, Tucson, Arizona)



Frequency of Sightings (France, 1954)



Distribution of number N of annual UFO sightings covered by the report

Figure 3: Distribution of UFO reports in France and in the former USSR

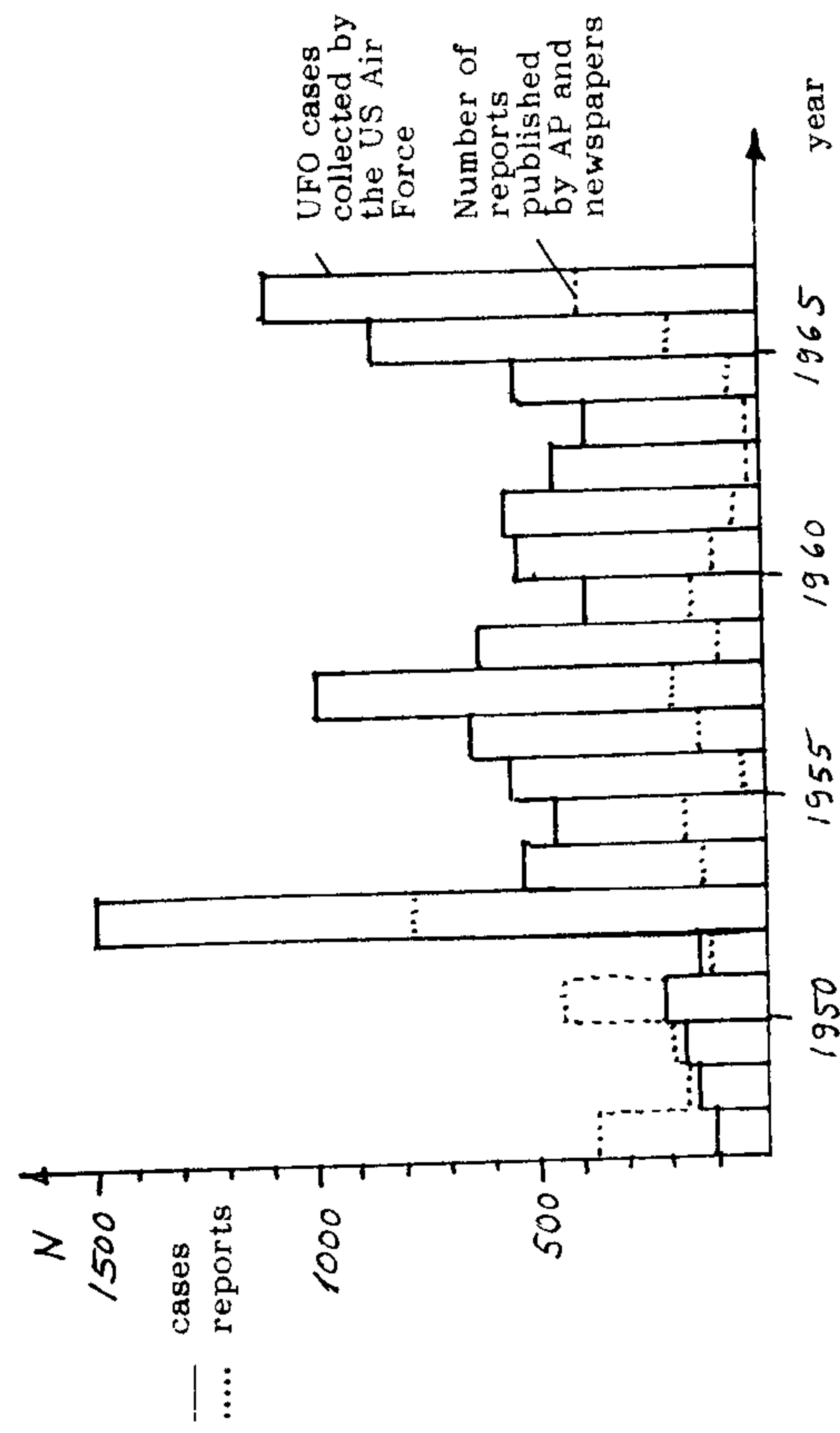
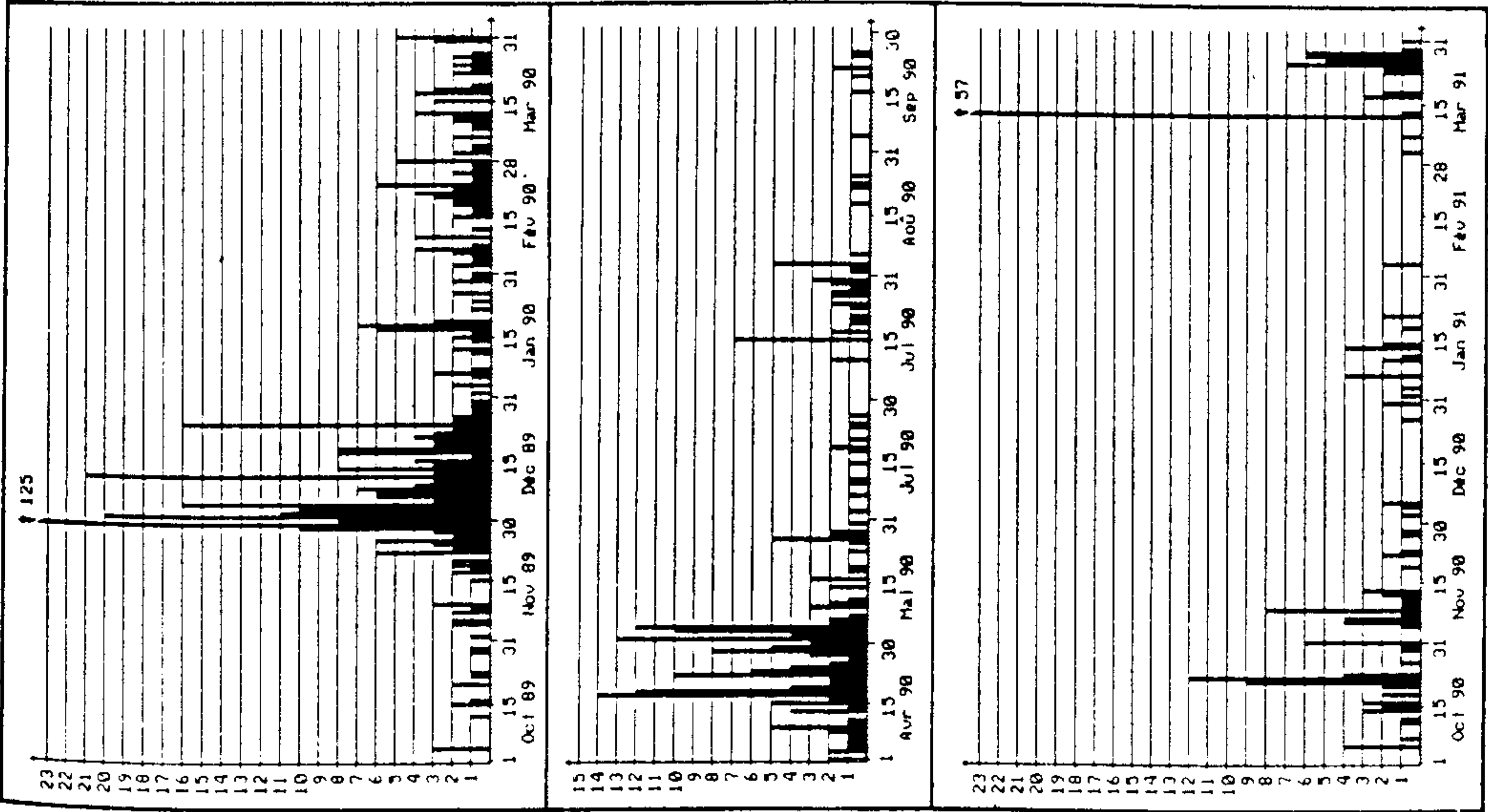
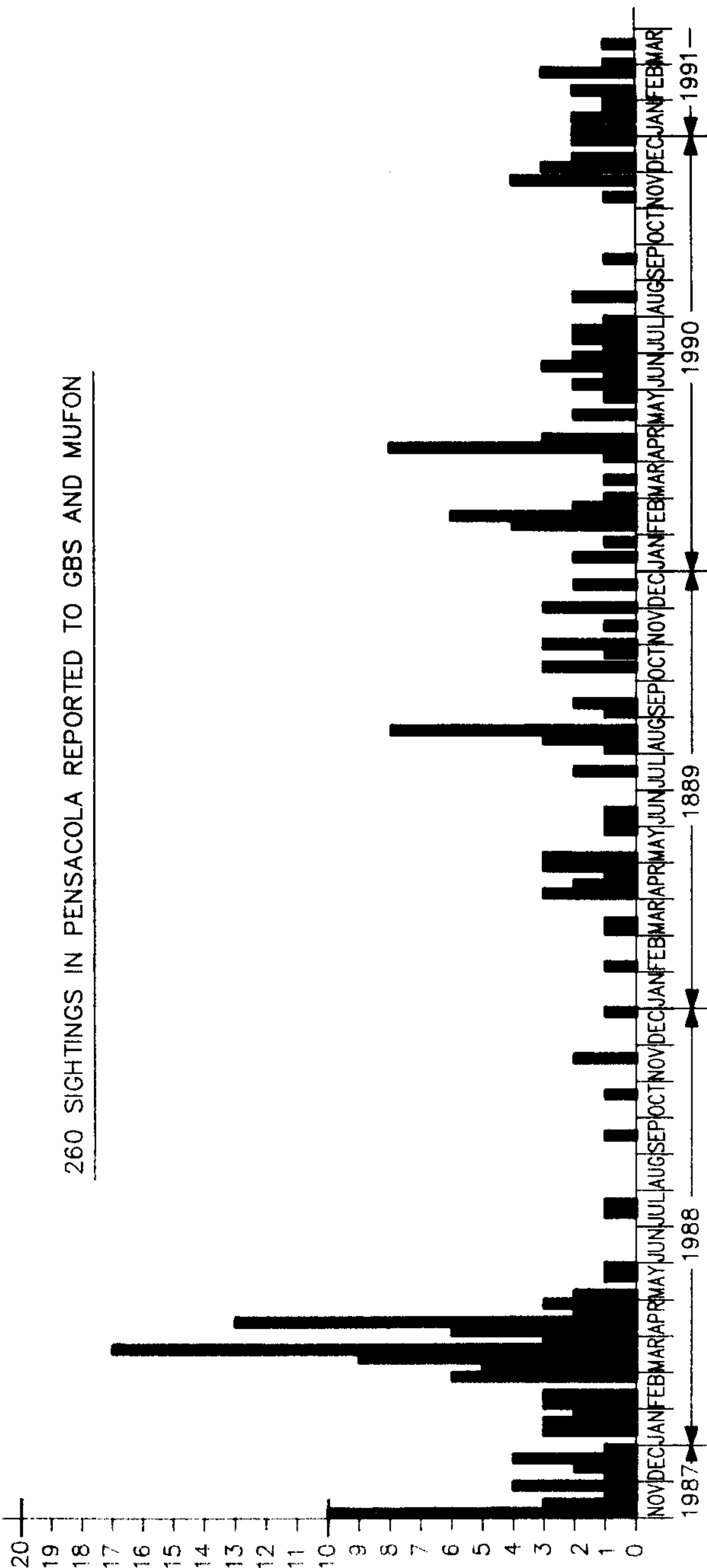


Figure 5: Number of published UFO reports and UFO sightings (Strentz 1970)

Figure 4: Distribution of Sightings in Belgium, SOBEPS (1990).

260 SIGHTINGS IN PENSACOLA REPORTED TO GBS AND MUFON



PENSACOLA NEWSMEDIA REPORTS (GBS, PNJ, WEAR)

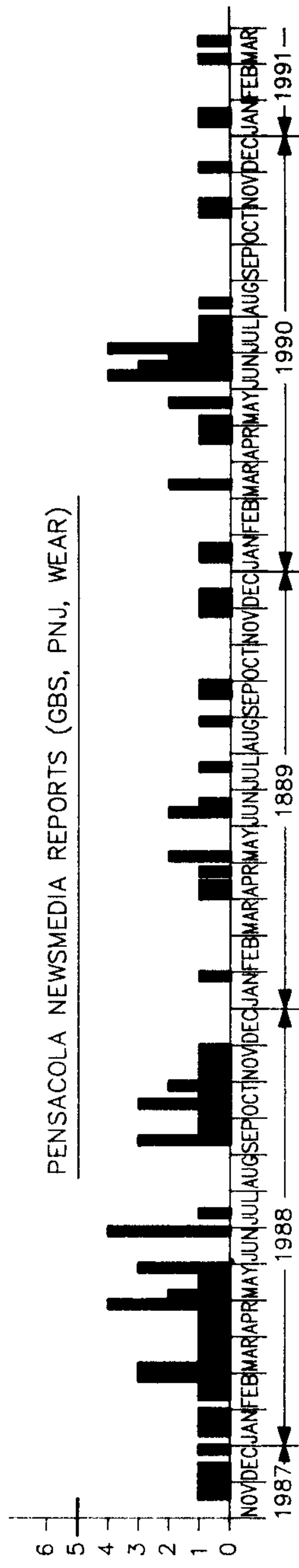


Figure 6: Weekly sightings and newsmedia reports, starting Sunday, Nov. 8, 1987 (B.S. Maccabee, MUFON 1991 International UFO Symposium Proceedings, Chicago, Illinois)

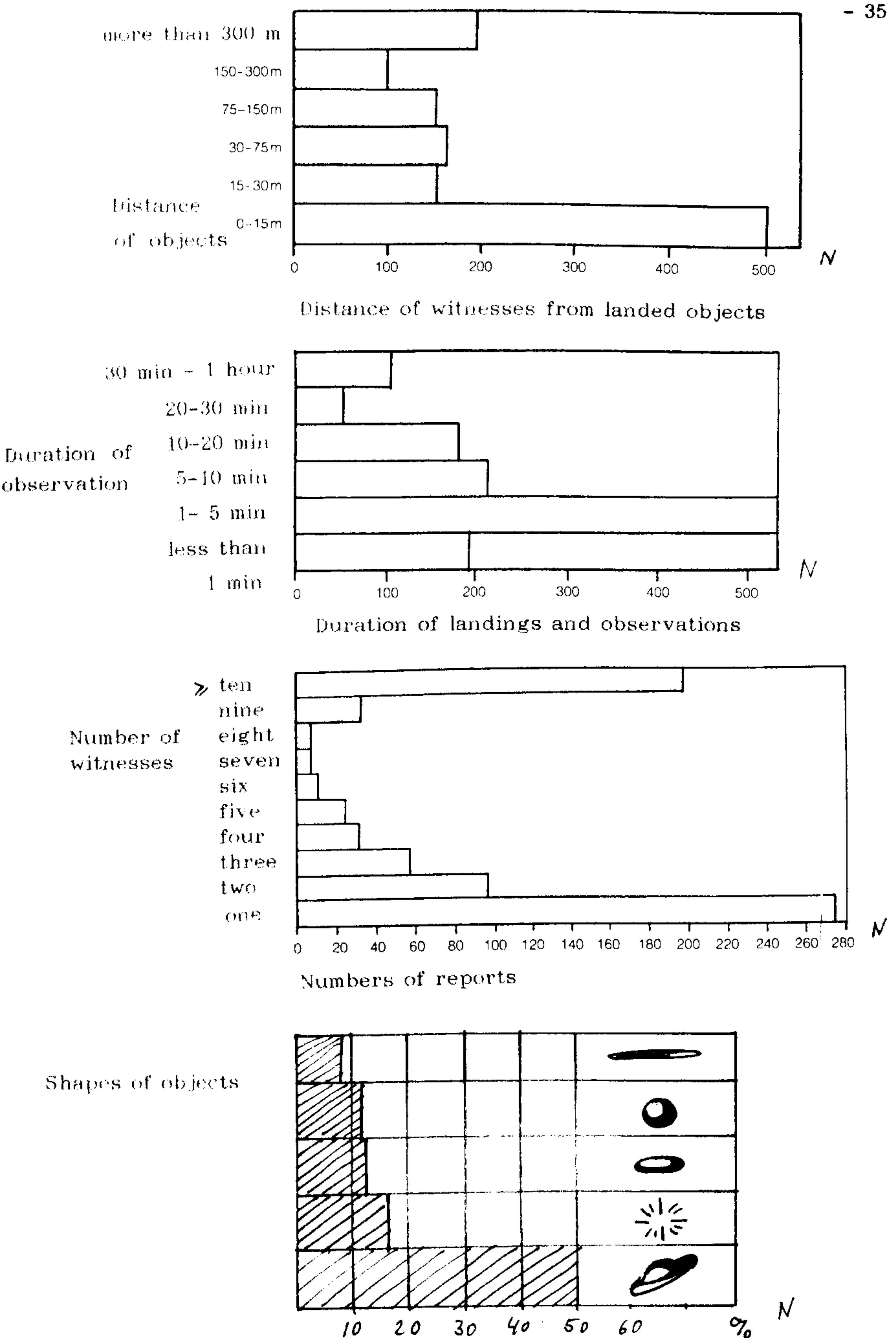


Figure 7: Parameters in UFO sightings: distances, durations, number of witnesses, shapes of objects (I.v.Ludwiger, 1992, Stand der UFO-Forschung, Frankfurt: Zweitausendeins)

T= 200 SECS
UFO 3# 20KV WD29MM 1453/214/752 1/17/89

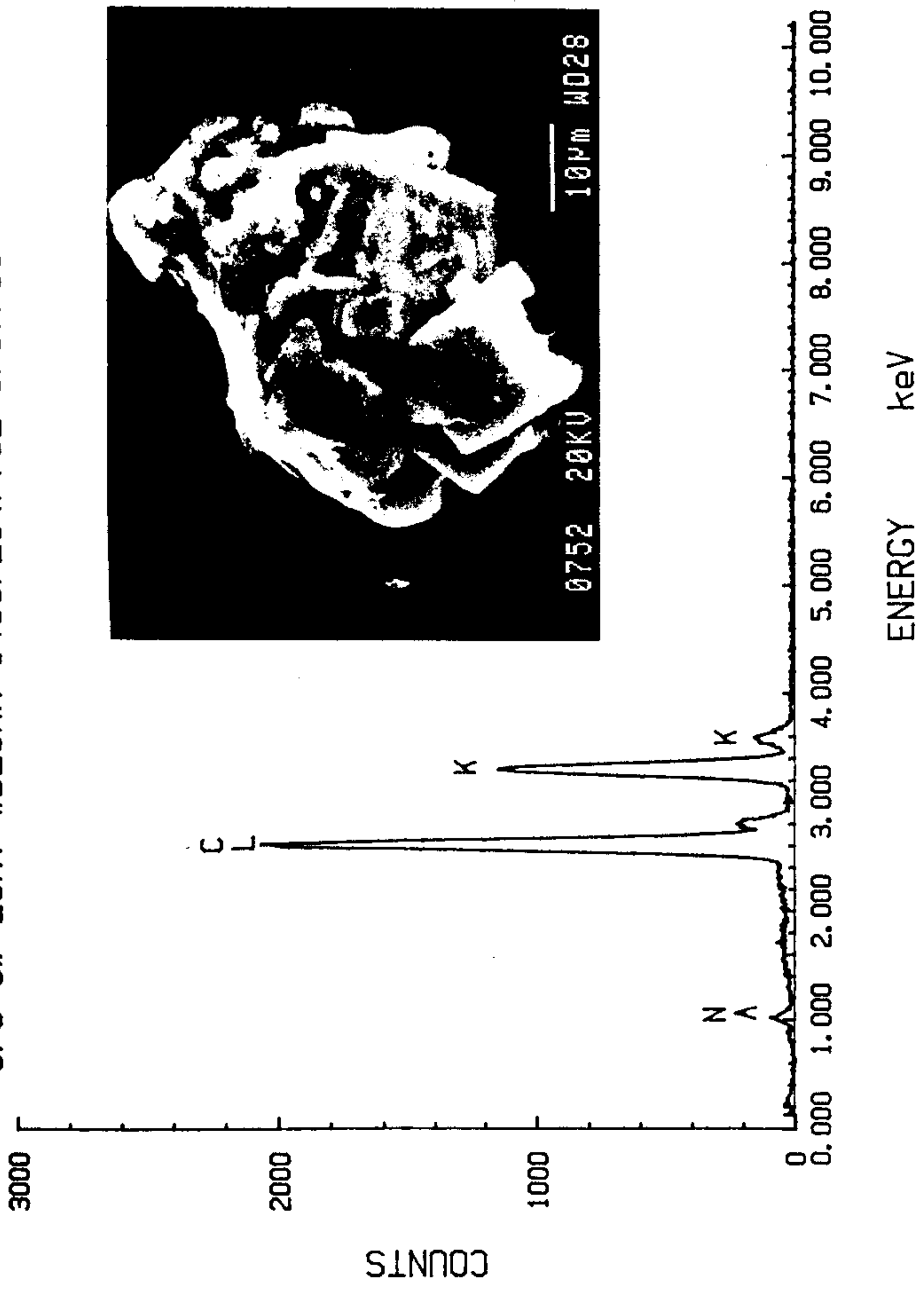


Figure 8: Chemical composition from a case in Pennsylvania
(Stan Gordon, MUFON UFO Journal, May 1989)

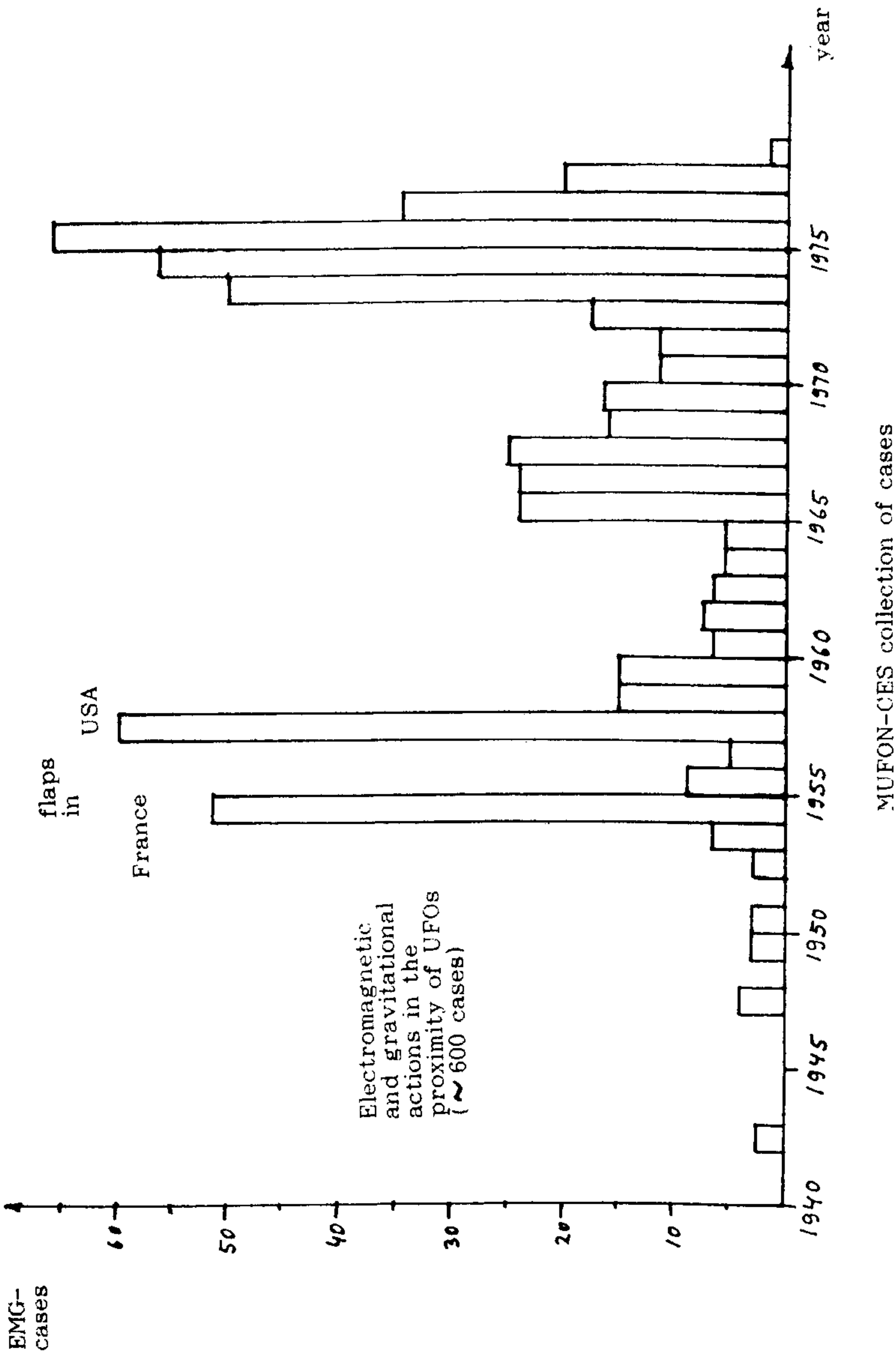
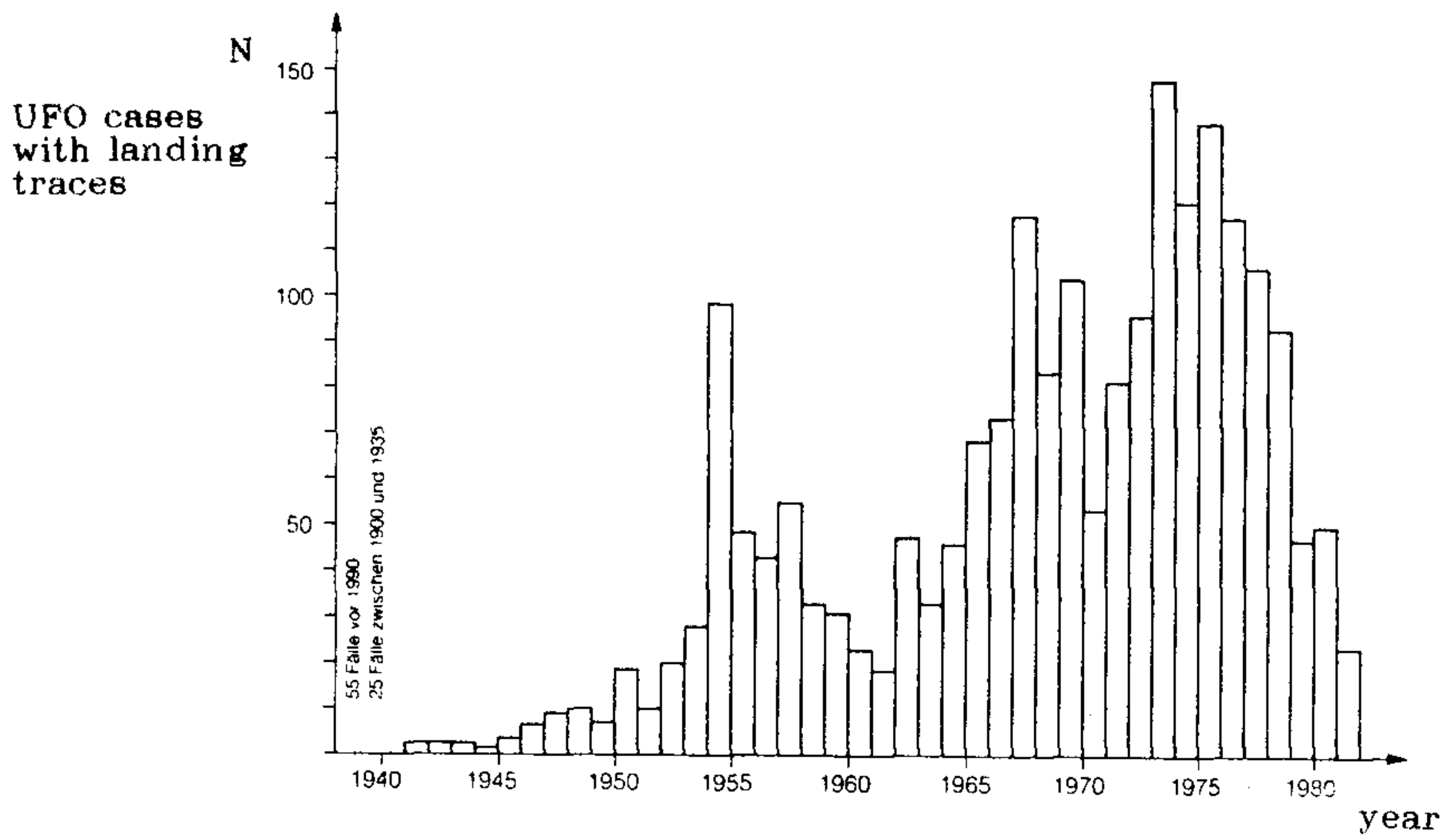
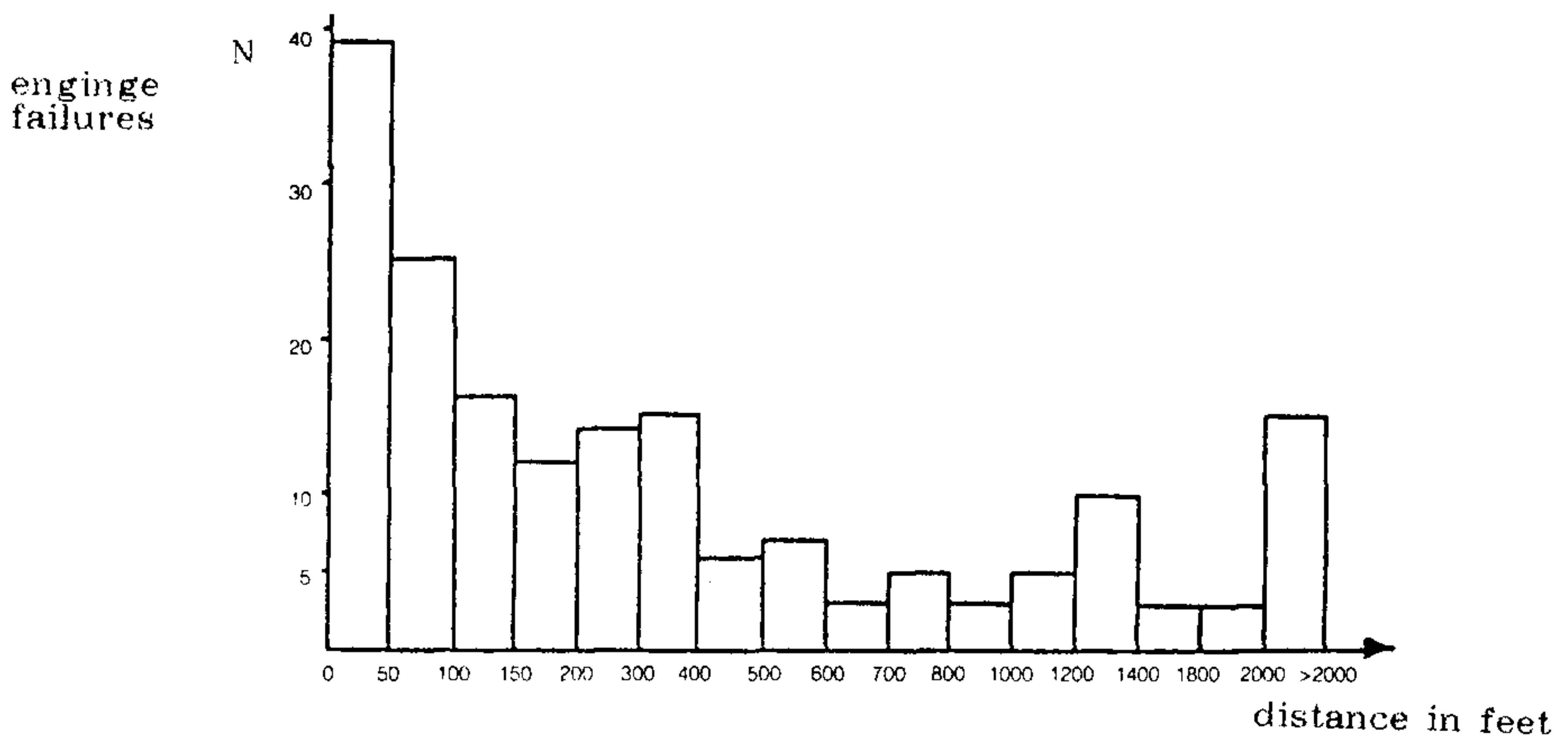


Figure 9: Annual distribution of UFO cases with electromagnetic effects



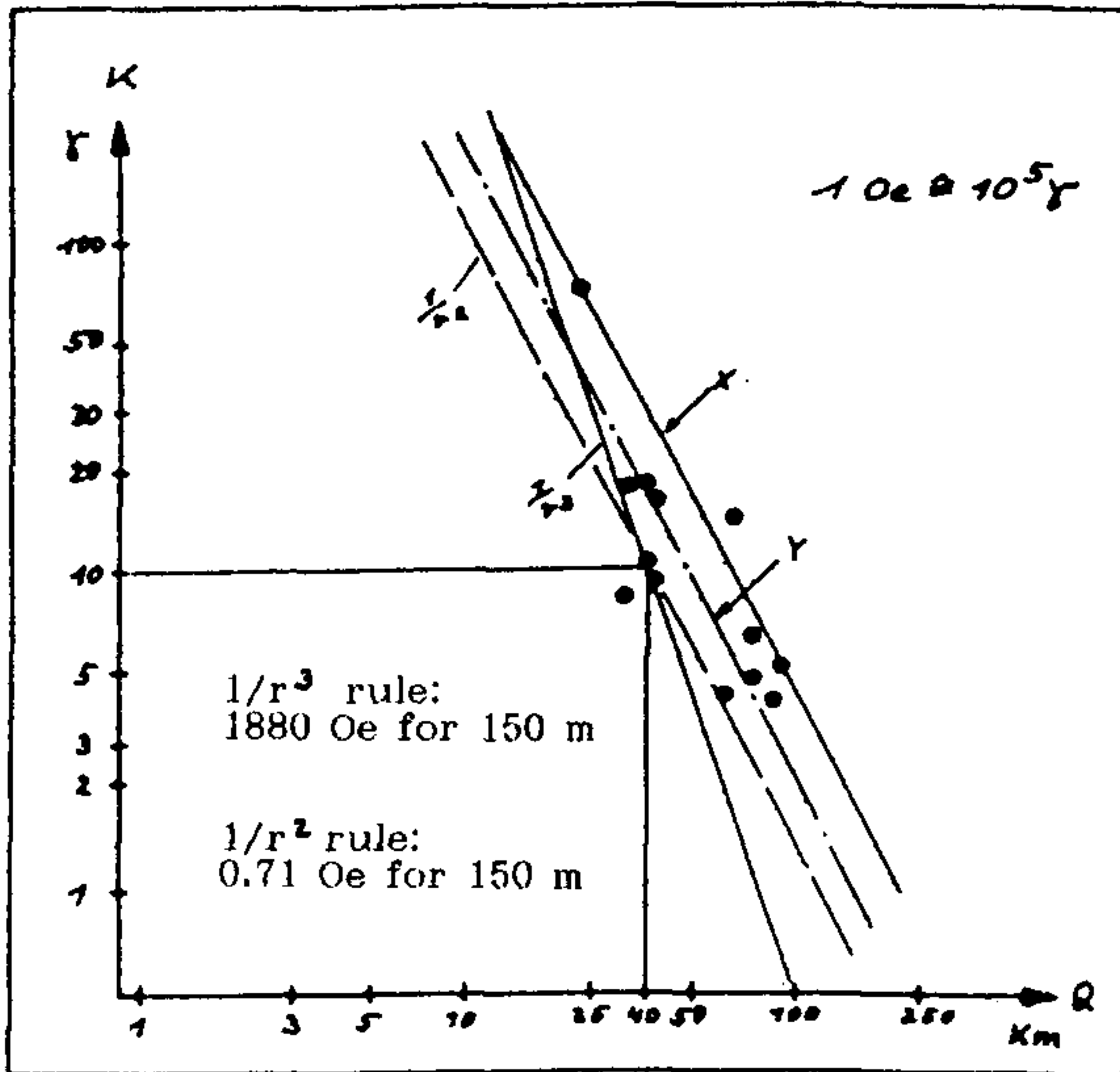
Annual distribution of all landings leaving physical marks (Ted Phillips, MUFON 1981 UFO Symposium Proceedings, MIT, Cambridge)



Influence of UFOs (of all sizes) on car engines as a function of distance. The effects decrease exponentially (Marc Rodeghier, The Spectrum of UFO Research, 1988, Chicago, Illinois; Hynek Center for UFO Studies)

Figure 10: Physical traces associated with UFO sightings

Correlation between UFO observations and disturbances of the magnetic field



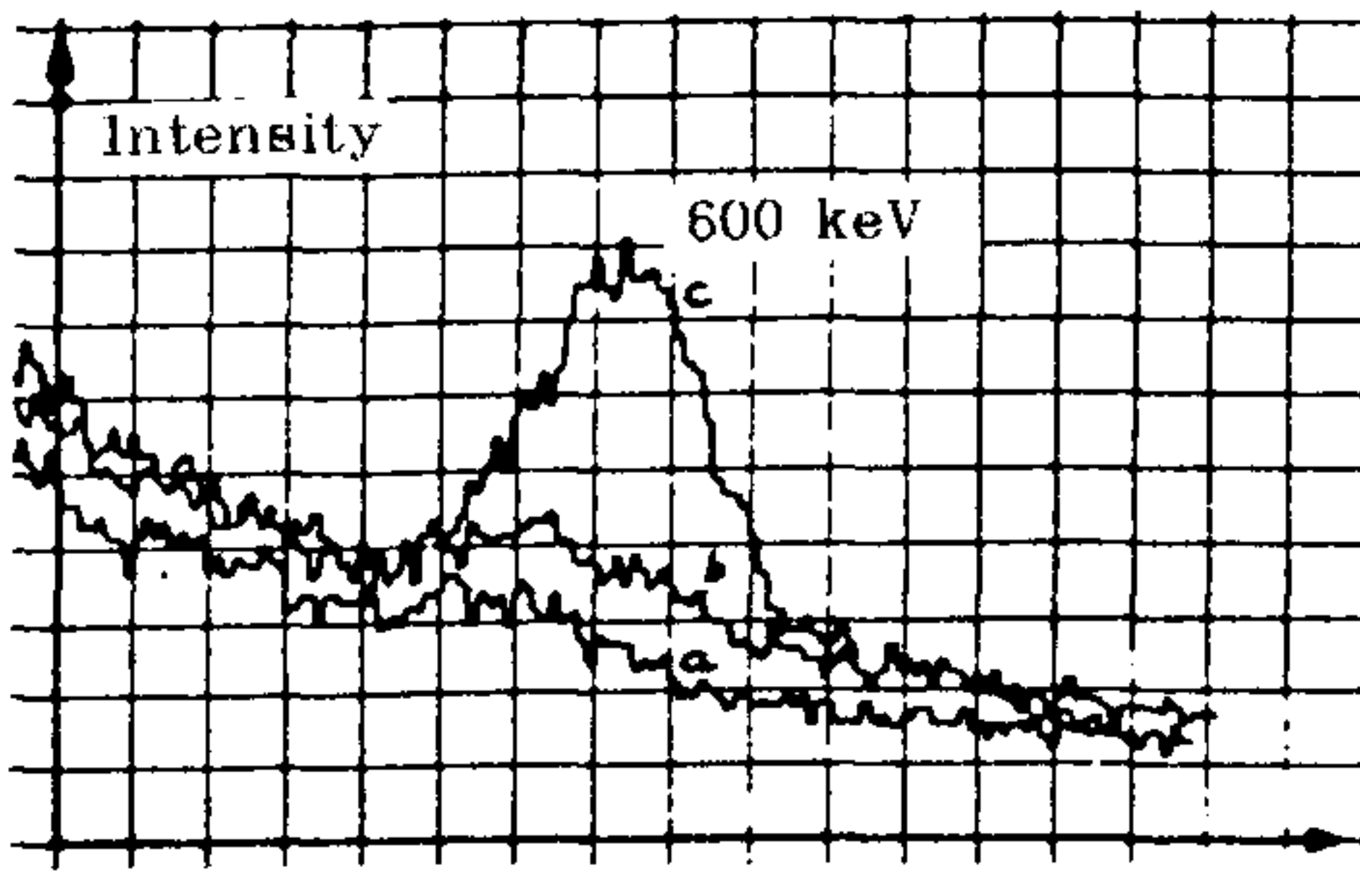
Graph showing upper limits of disturbances caused by a UFO (from a statistical study of October, 1954). (1 gamma = 10^{-6} earth's magnetic field)

Key:

- K = Peak to peak disturbances of the vertical component of the earth's magnetic field.
- Q = Distance in km of UFO from Chamon-la Foret.
- X = Calculated upper limit of disturbances caused by a UFO.
- Y = Observed upper limit of disturbances caused by a UFO.
- o = UFO observation in the neighborhood of Chambon-la-Forêt.

Source:

FSR Vol. 20, No. 1, Jan./Febr. 1974



Gamma activity from
(a) background,
(b) reference soil,
(c) test soil.

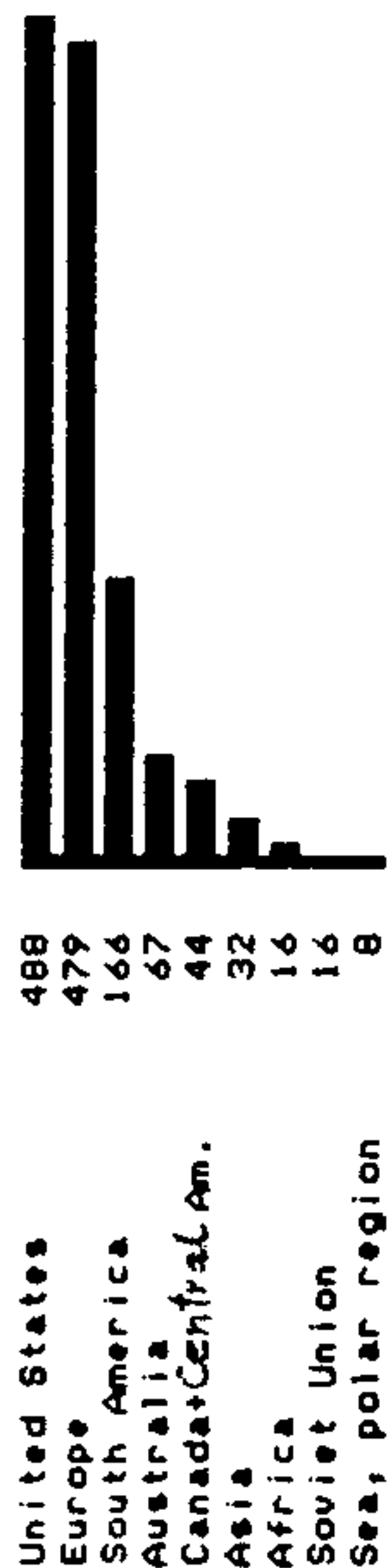
Gamma activity of the soil at the spot on which a red luminous sphere landed in Fnebacken, Sweden (August 29, 1970)

Source:

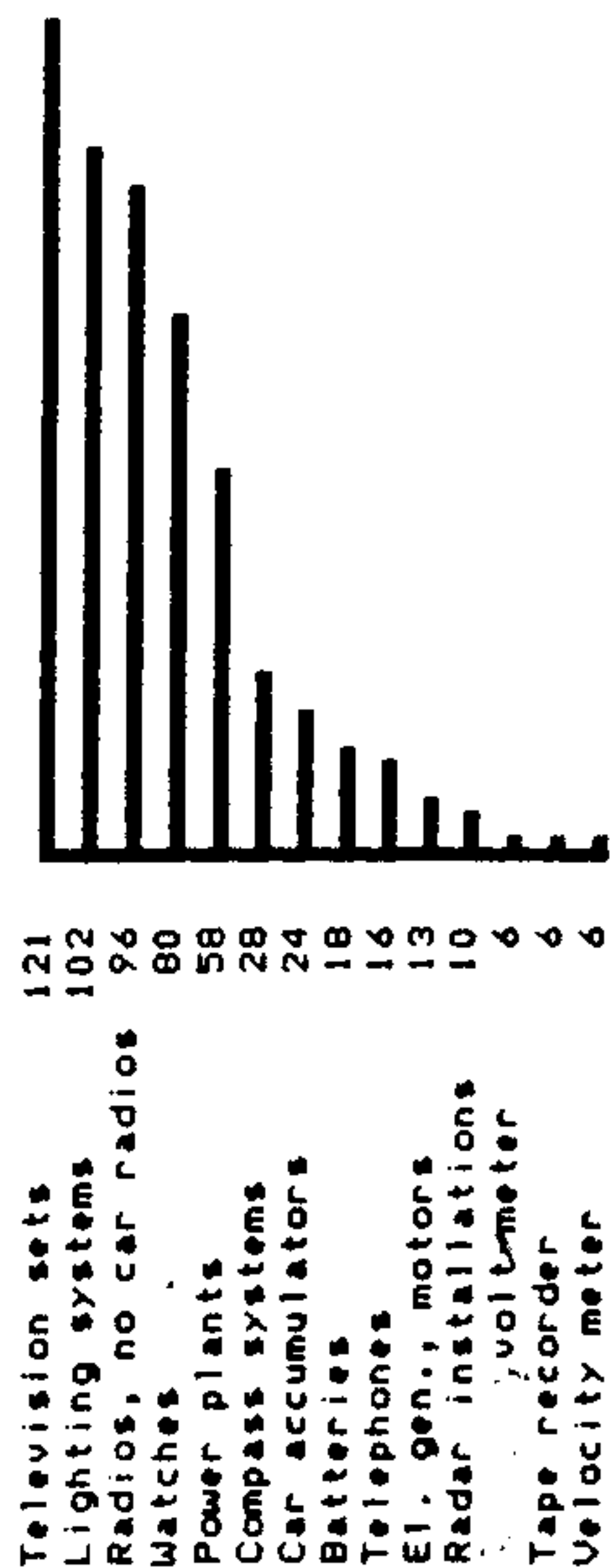
FSR Vol. 17, No. 1, Jan./Febr. 1971

Figure 11: Magnetic and radioactive effects caused by UFOs

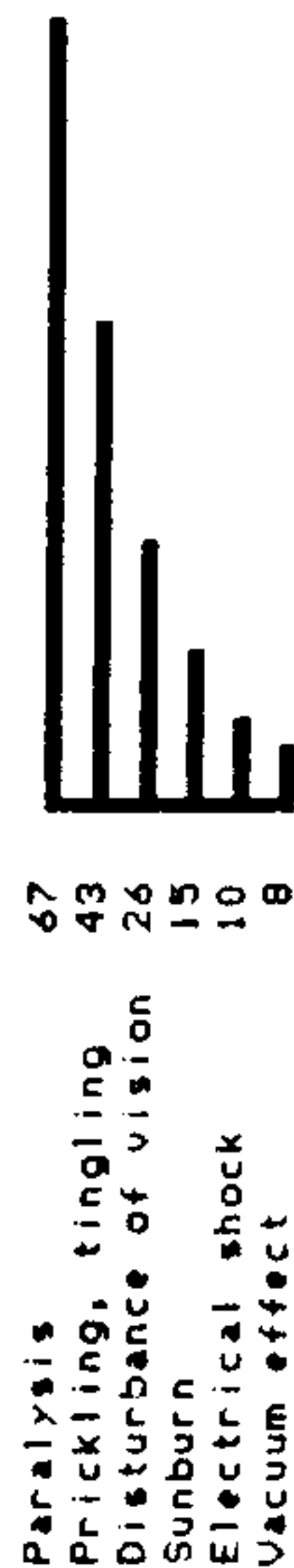
Electromagnetic and Gravity Effects by Geographical Region



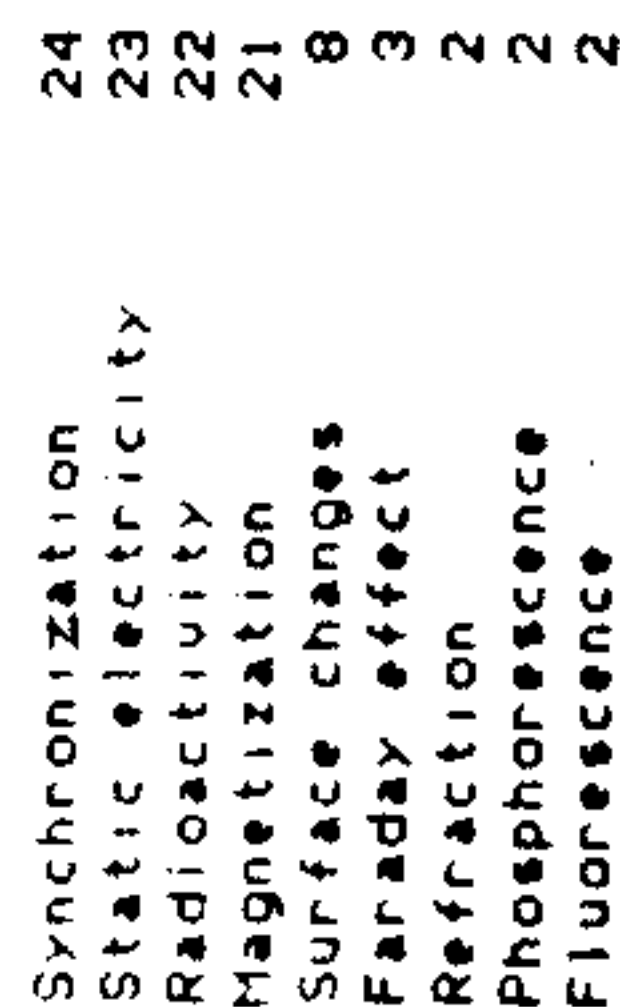
General Interferences



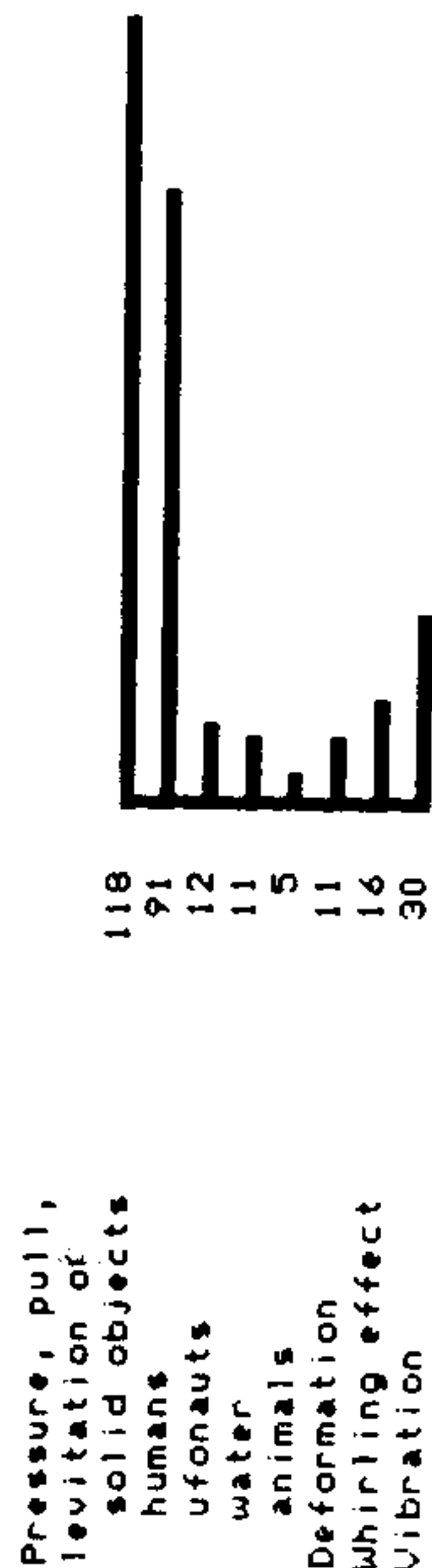
Special physiological effects



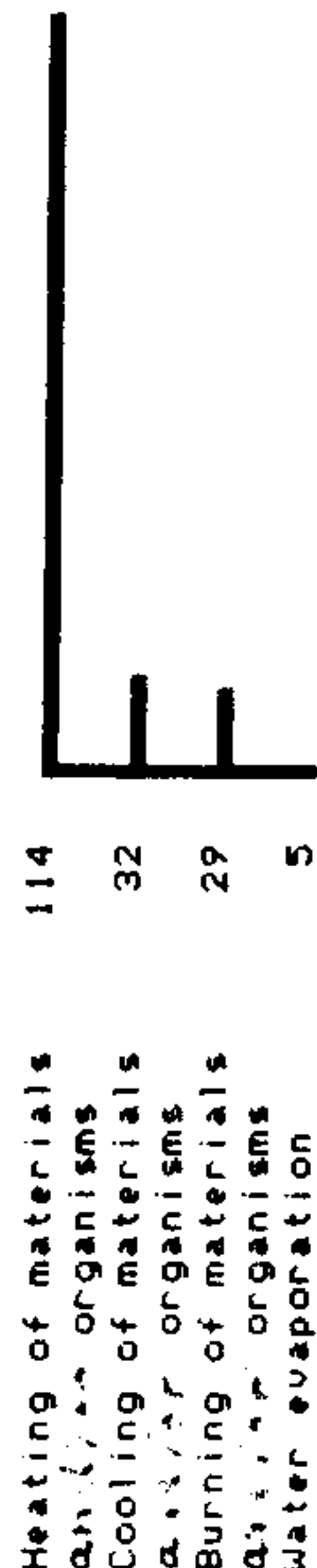
Special physical effects



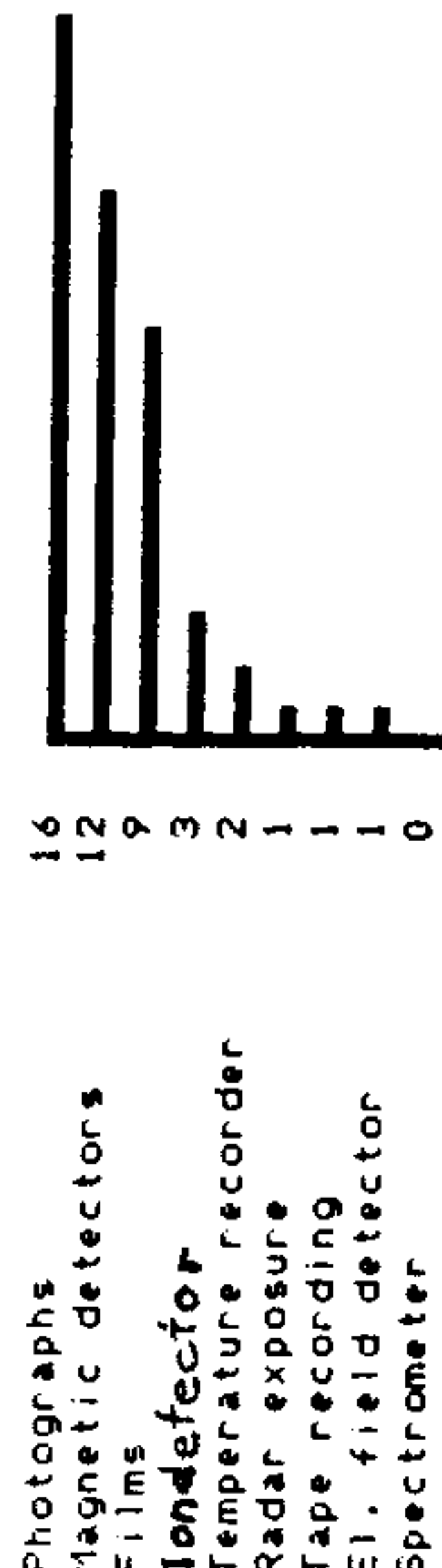
Mechanical effects



Thermodynamic effects



Registration of UFOs



EM-Interferences With

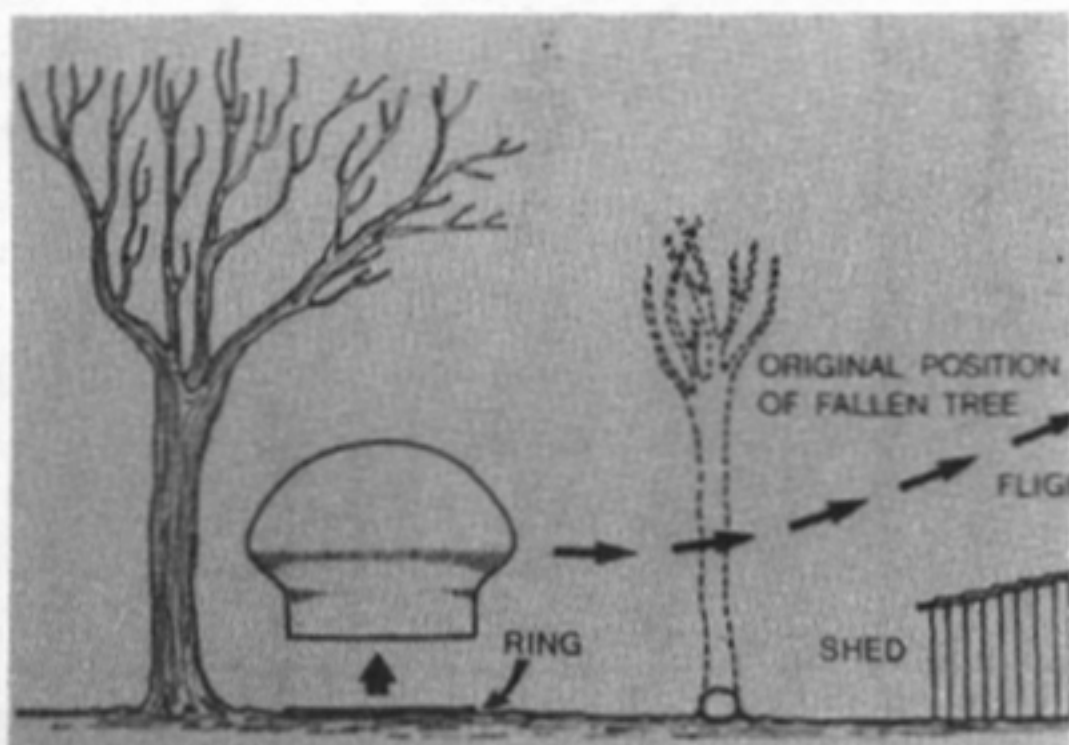
cars, motorcycles, planes, ships, and rockets

Total number of effects on



Figure 12:

Distribution of physical effects caused by UFOs, collected by A. Schneider (MUFON-CES Report No.: 9, 1983)



Sketch of the object in Delphos (E. A. Faruk, 1989)



Ring outlined by unmelted snow taken December 4, 1971. Soil samples were taken from here for chemical analysis.

Figure 13: In November 1971 the 16 year old son of a farmer in Delphos, Kansas, observed an object hovering close to the ground. A hitherto unknown form of energy acted upon the soil for a period of 3 minutes, leading to effects which cannot be explained by the action of high temperatures alone.



Figure 14: One of 2 photographs taken by farmer Paul Trent on May 11, 1950, at McMinnville, Oregon. It remains one of the most remarkable – and to all appearances authentic – pictures ever taken of a UFO.

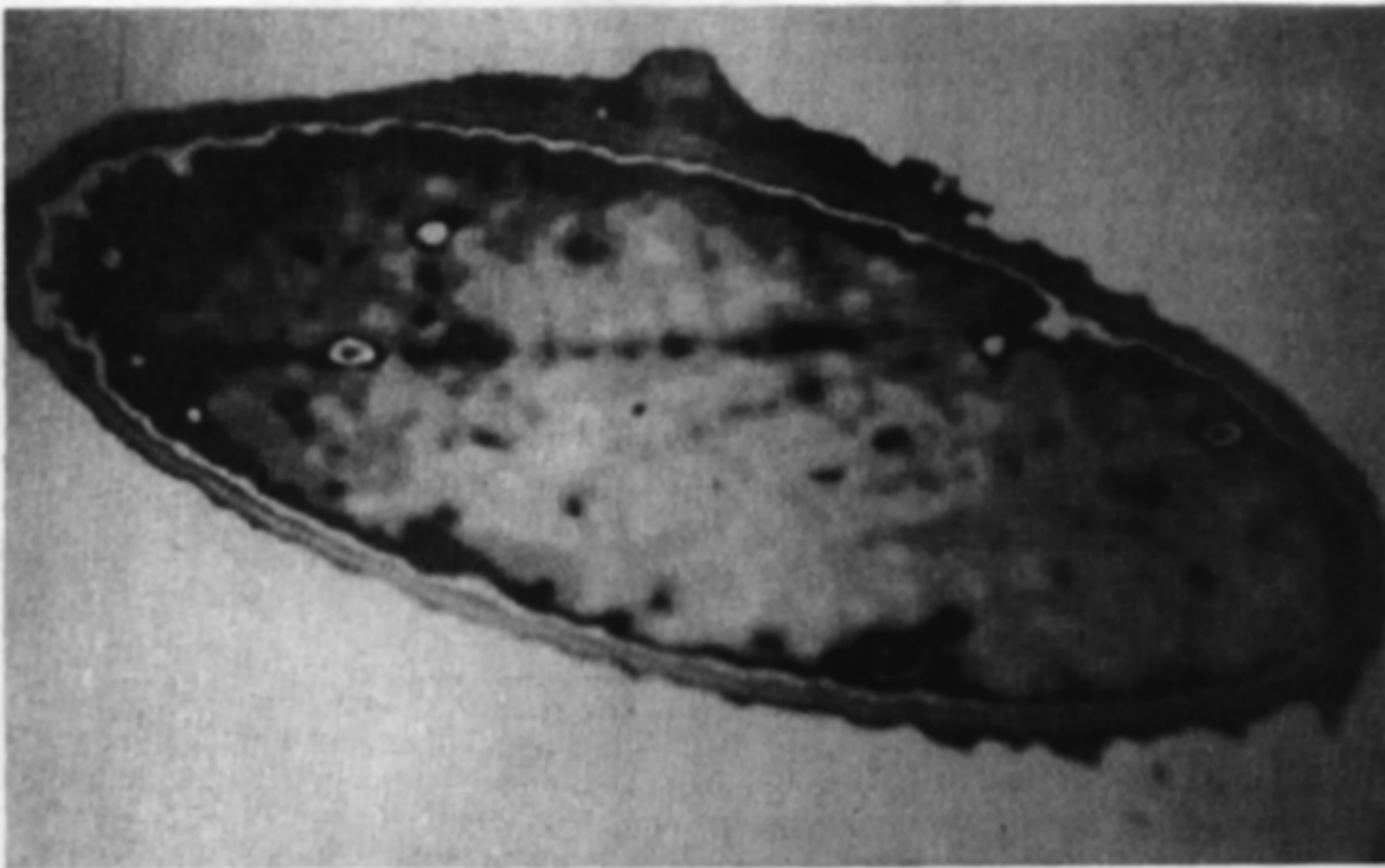
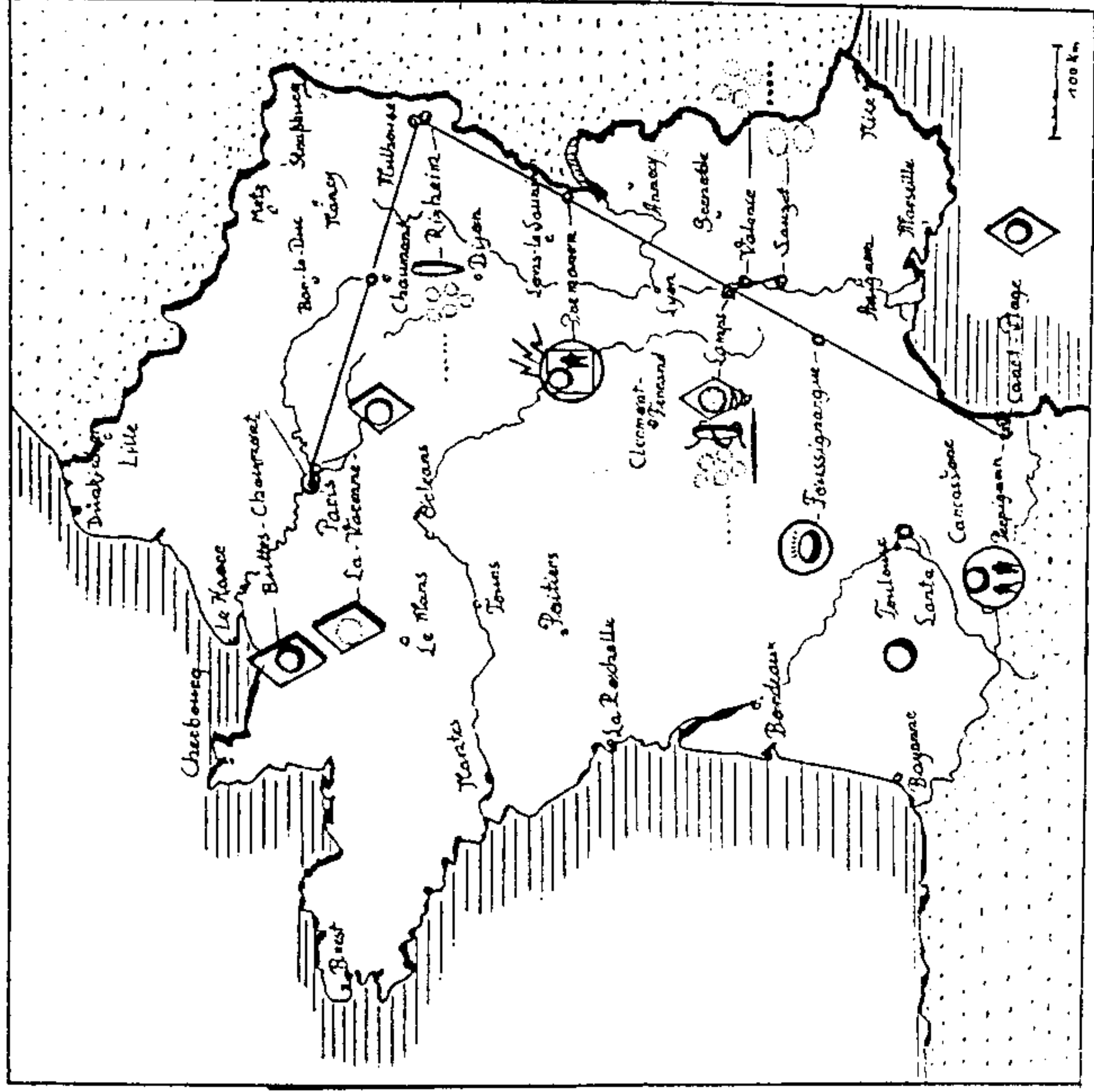


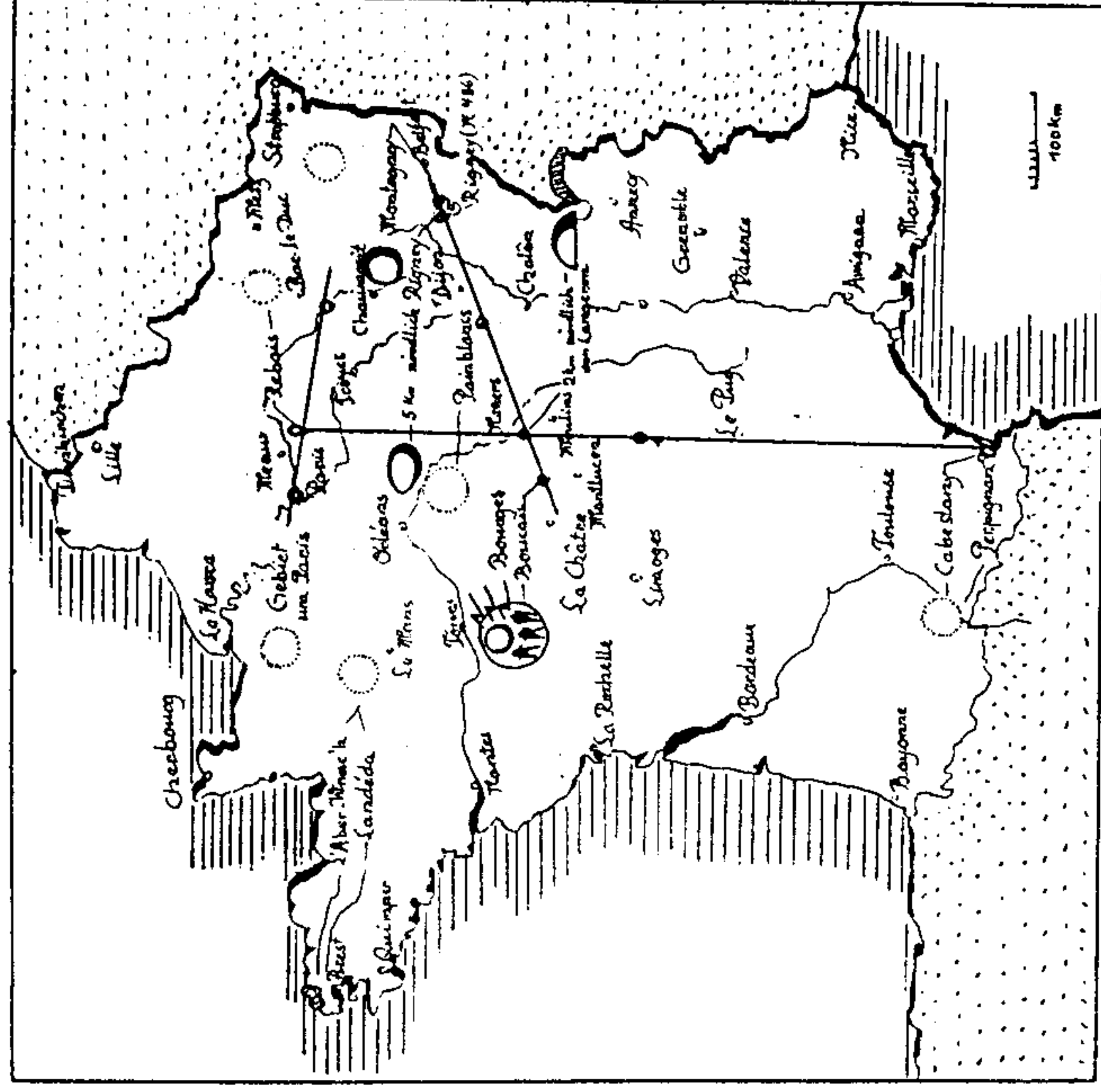
Figure 15: A close-up of the photograph of Fig. 14 shows the blurred edge characteristic of large objects at a great distance. The diameter of the McMinnville object was about 14 m.



Figure 16: One of several hundred triangular objects seen over Belgium between November, 1989, and 1991. This photograph was taken on April 7, 1990, near the town of Petit-Rechain in the province of Liège (SOBEPS 1990).



Sightings and alignments on September 27, 1954.



Sightings and alignments on September 29, 1954.

Figure 17: UFOs over France, September, 1954 (Michel 1958).

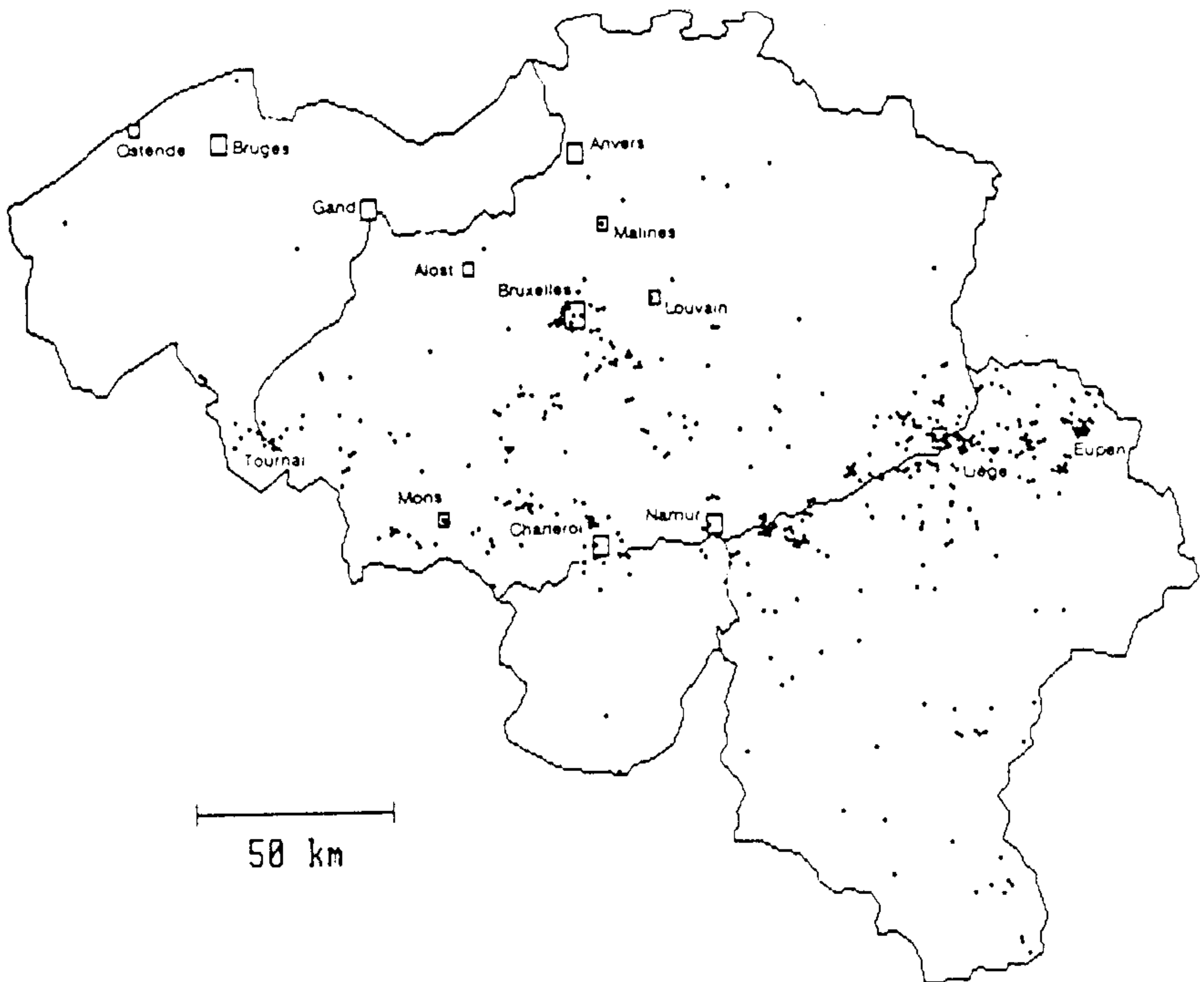
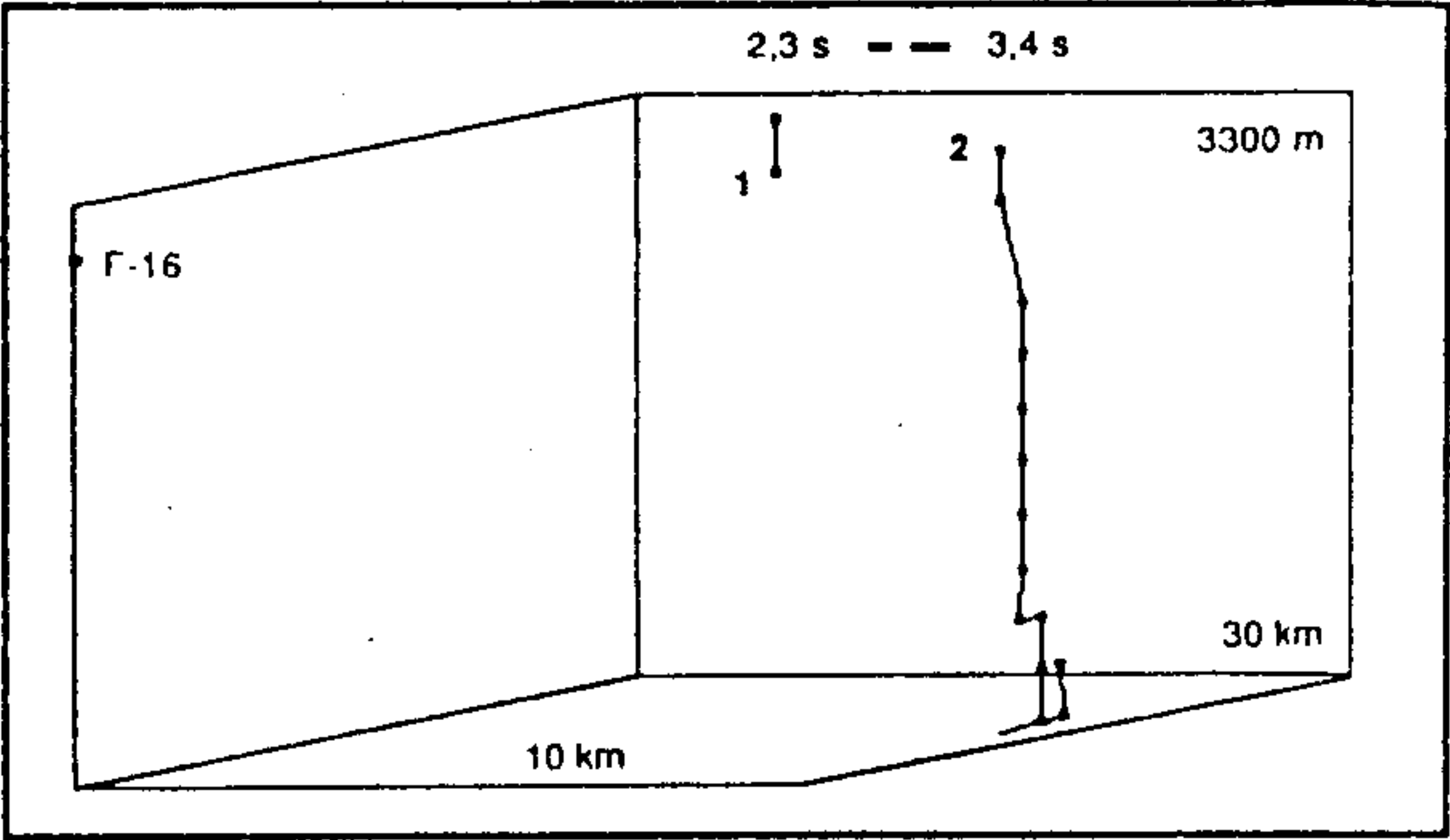
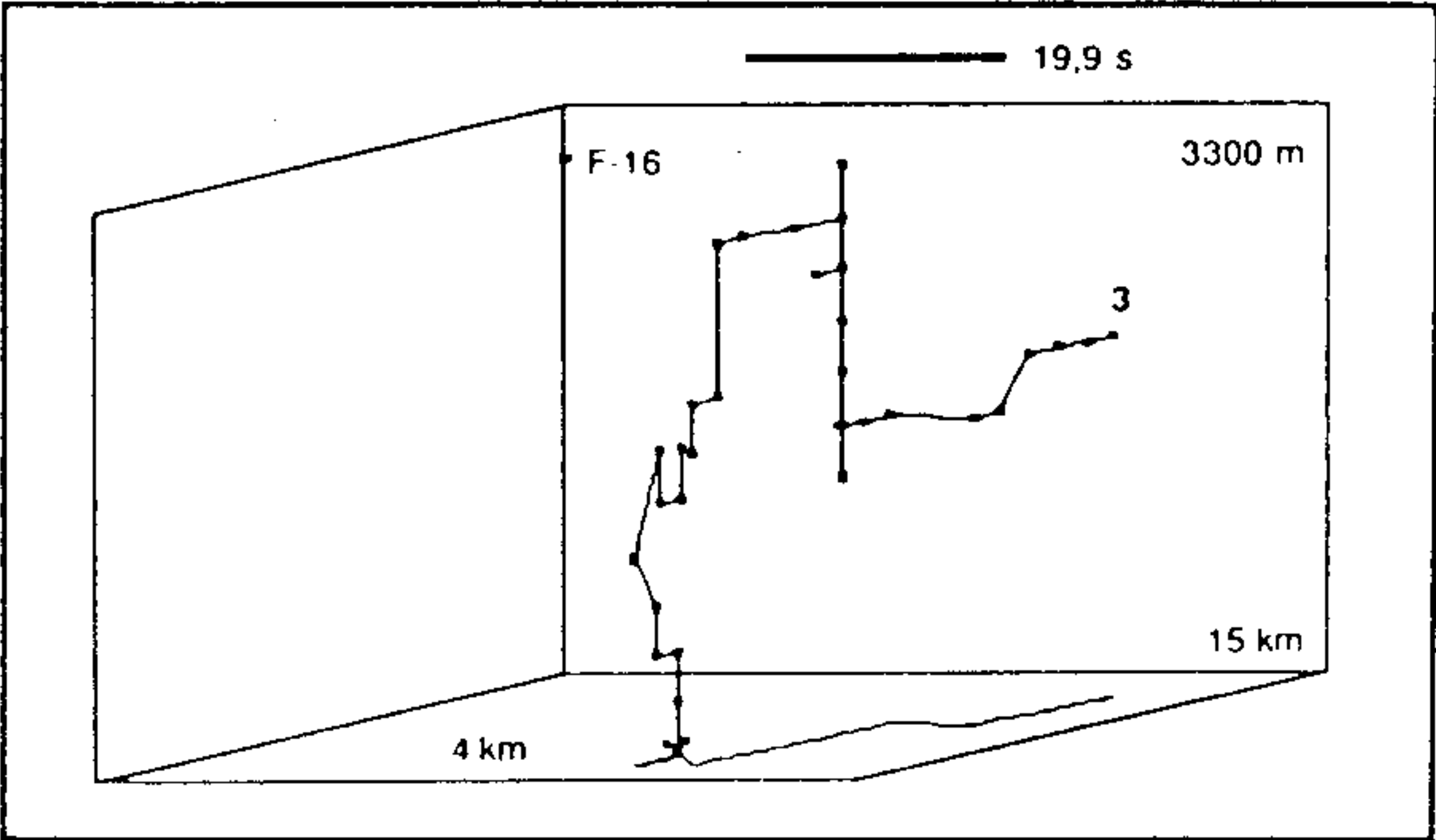


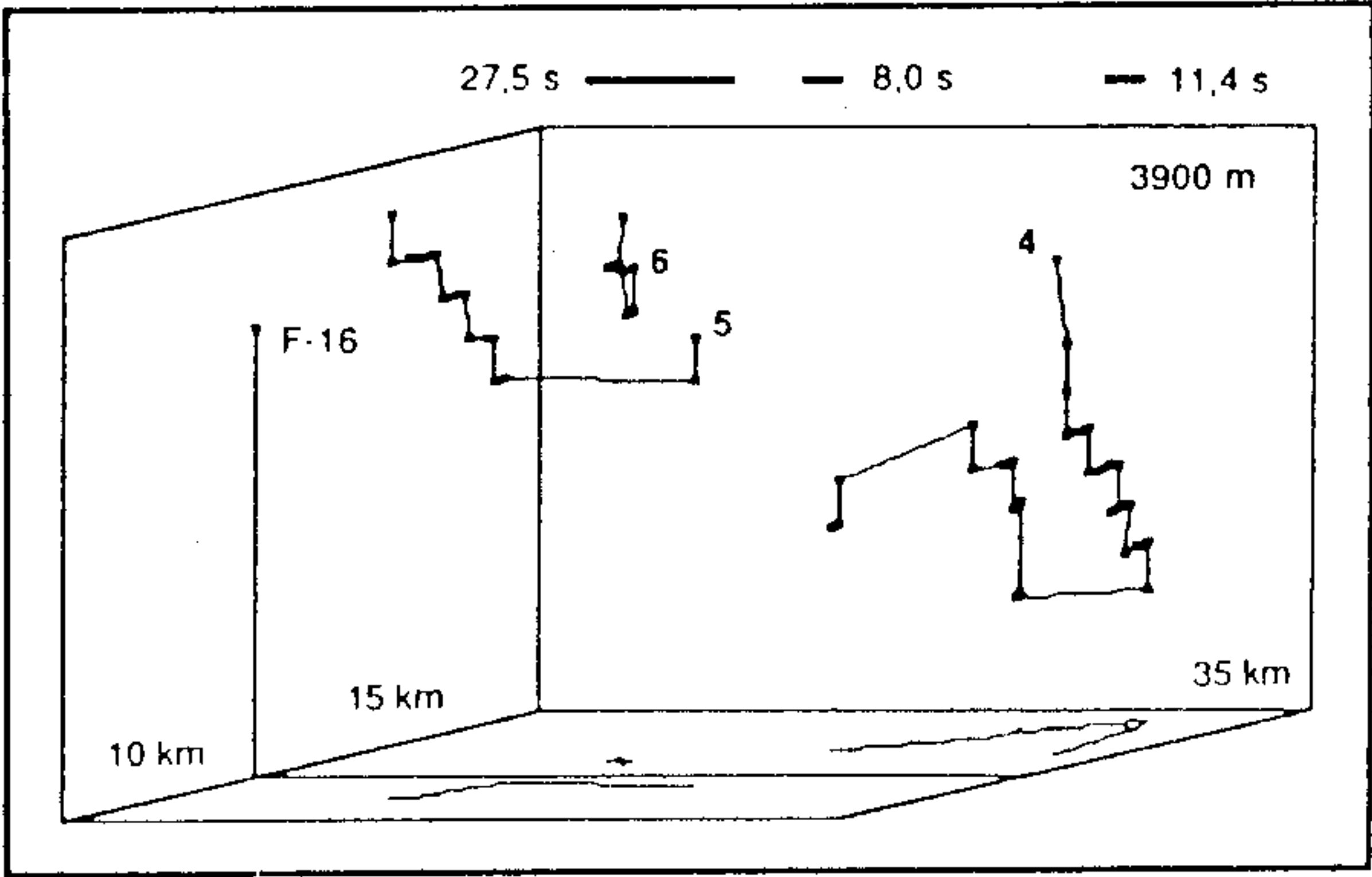
Figure 18: Geographical distribution of observations in Belgium from November 29, 1989, to March 12, 1991 (SOBEPS 1990).



Trajectories of objects 1 and 2.

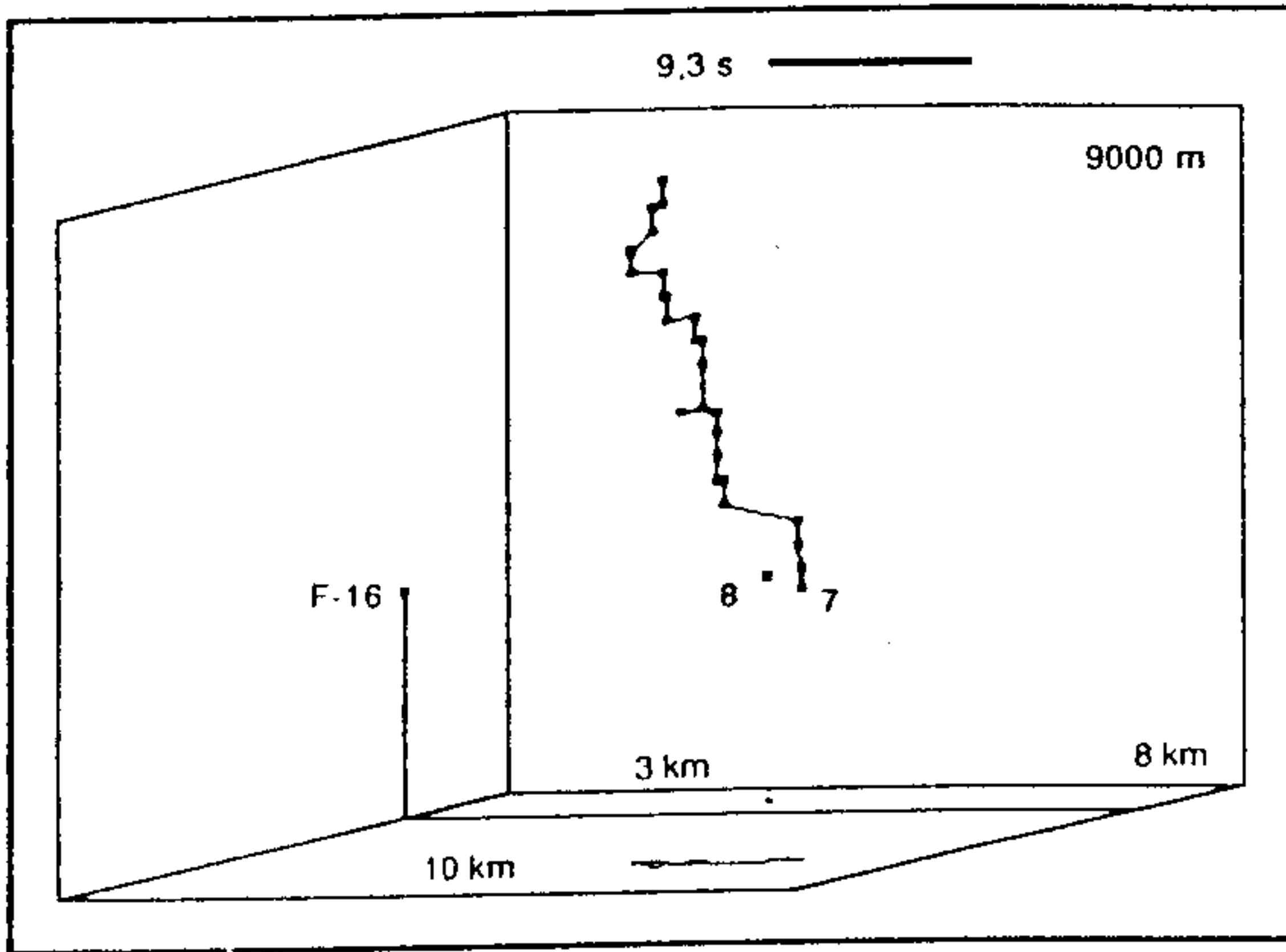


Trajectory of object 3.

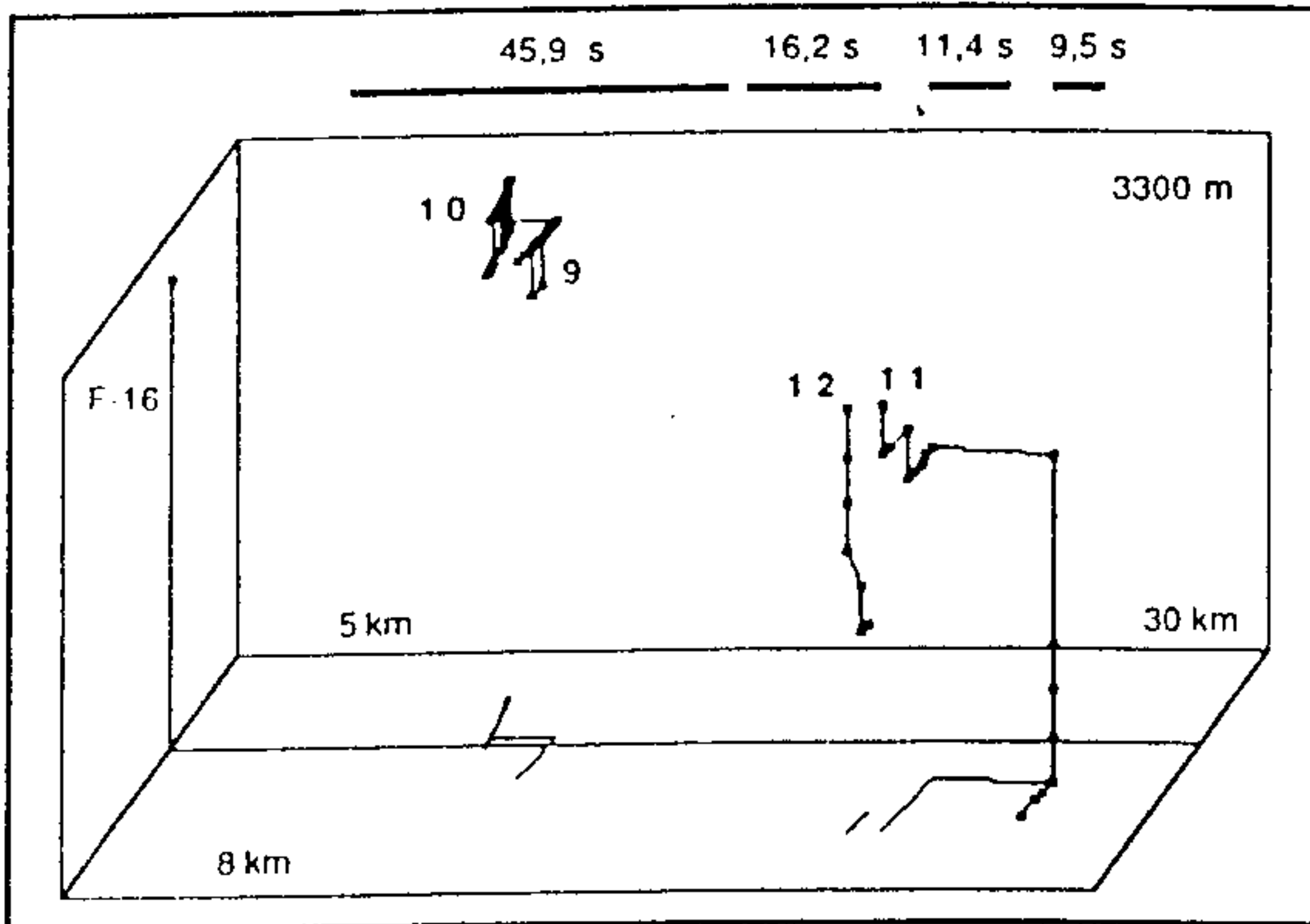


Trajectories of objects 4, 5, and 6.

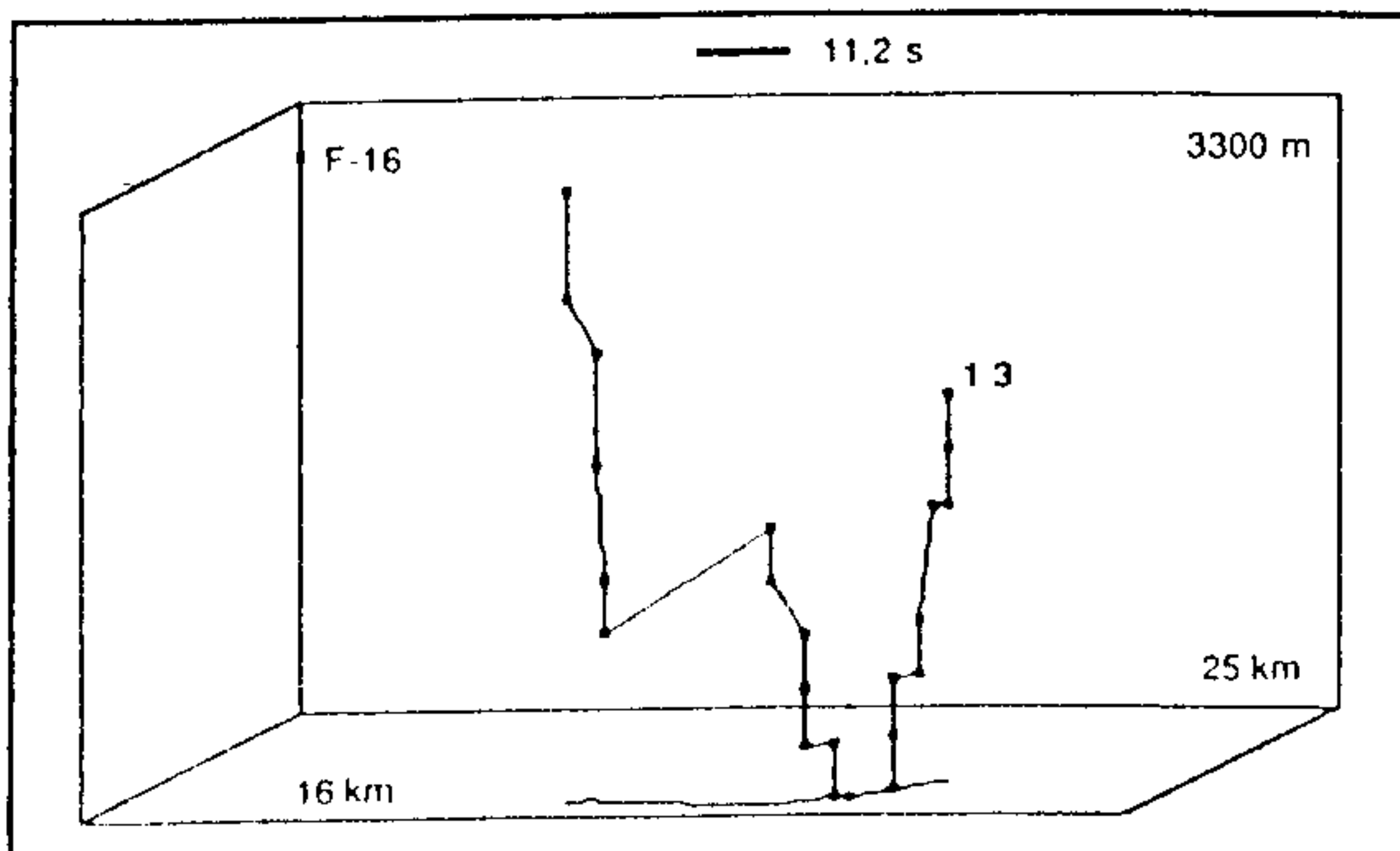
Figure 19: Three-dimensional radar traces registered by an F-16 on-board radar device near Brussels, March 30-31, 1990. The lines mark the lock-on times for objects 1-4.



Trajectories of objects 7 and 8.



Trajectories of objects 9-12.



Trajectory of object 13.

Figure 20: Radar traces of the unusual movements of UFOs as recorded by an F-16:

