



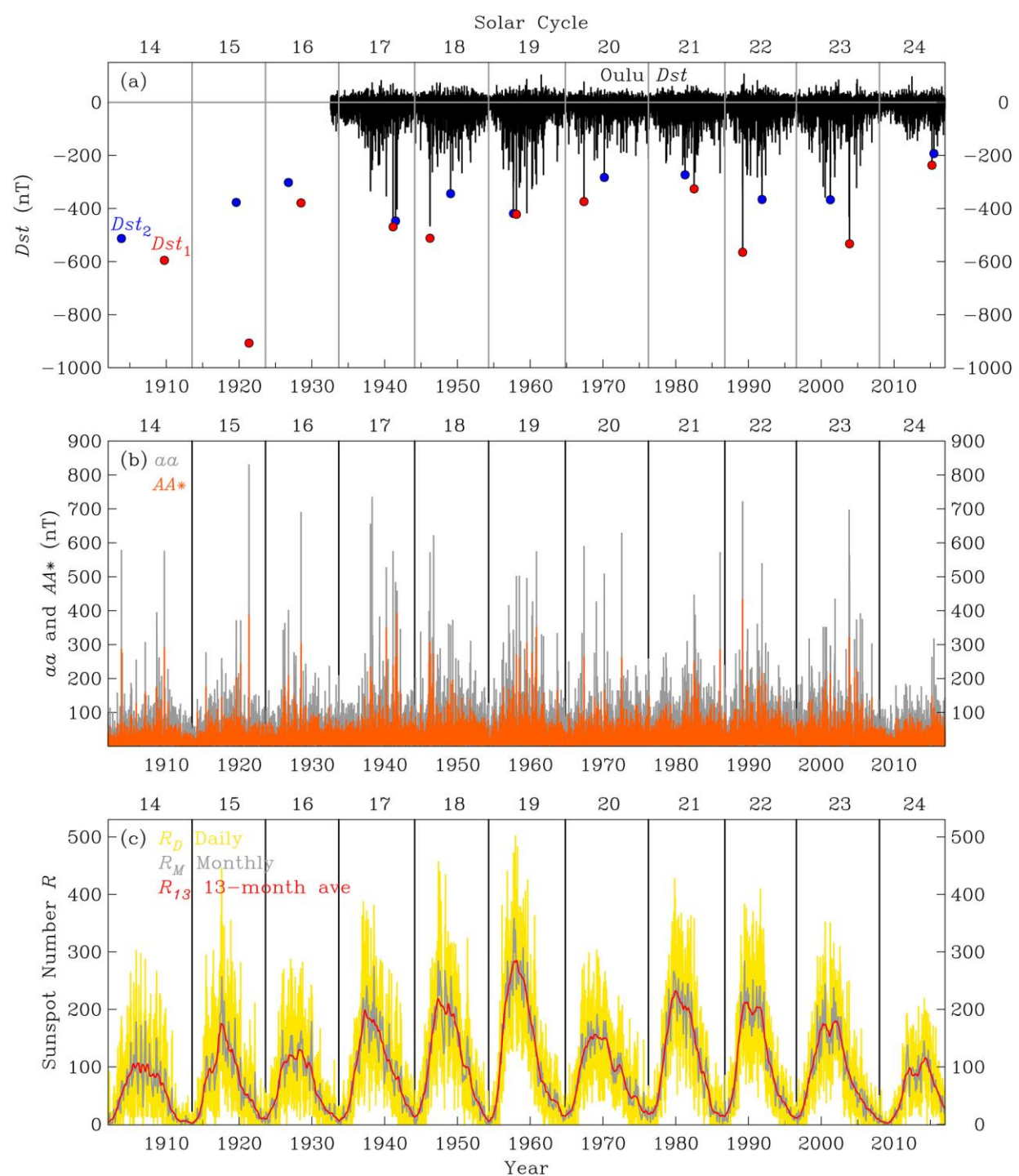
**Guerra bajo el Sol: Explorando la conexión entre tormentas solares
y eventos inexplicables durante la Segunda Guerra Mundial**

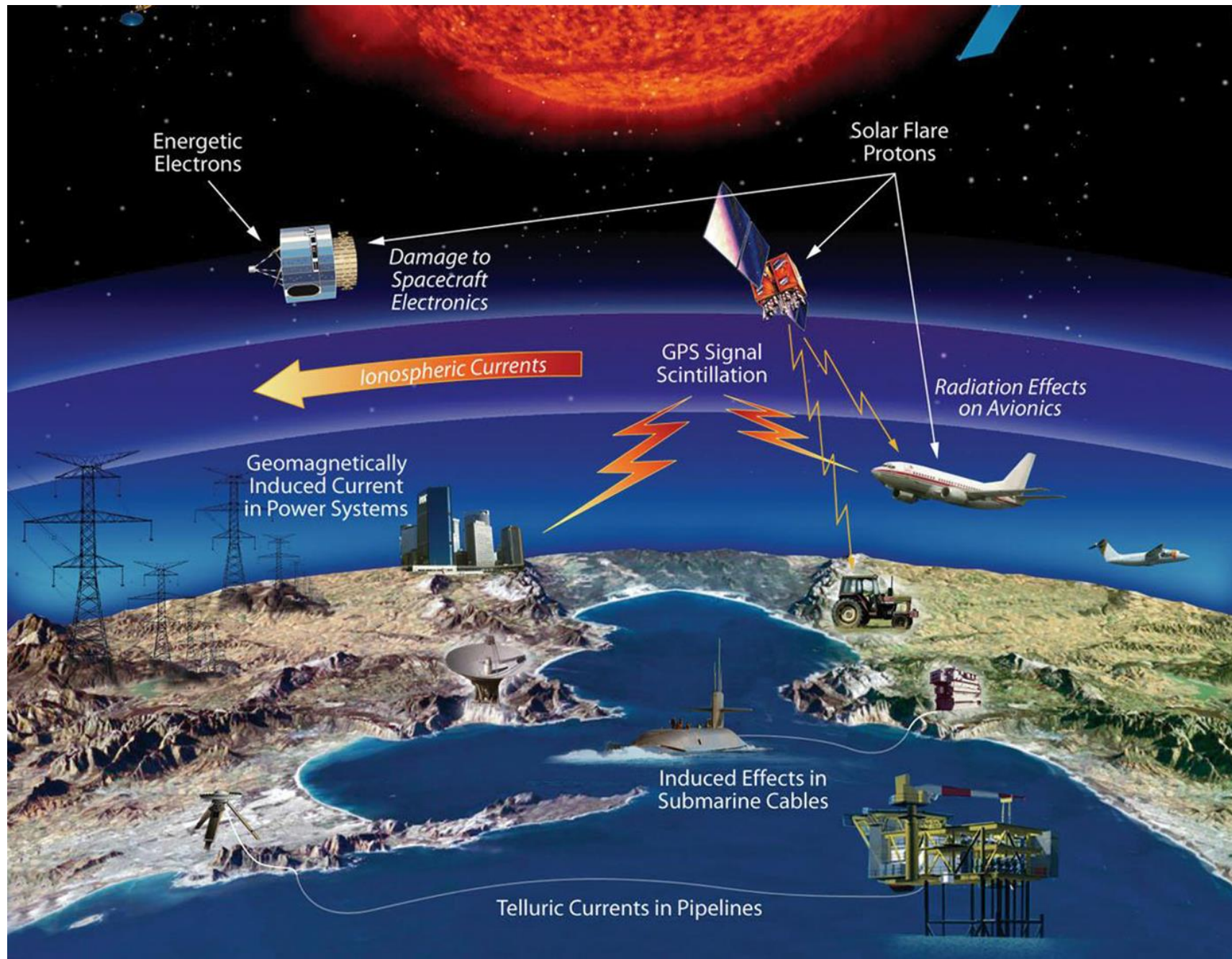
S. Vargas Domínguez¹, F. Moreno Cárdenas², C. Buitrago Casas³ y S. Grueso Pinzón²

1 Universidad Nacional de Colombia, Observatorio Astronómico Nacional

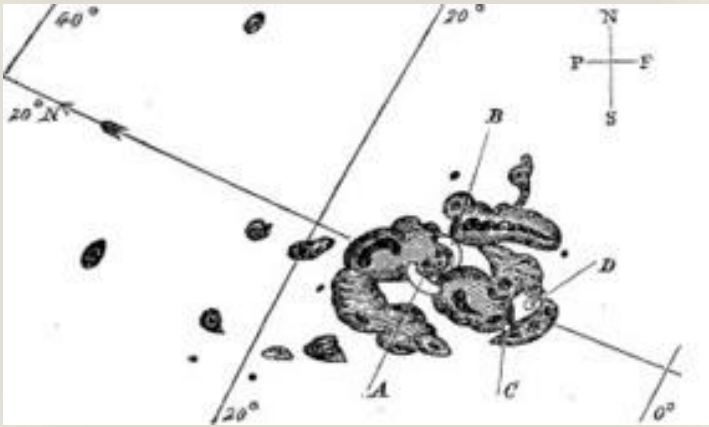
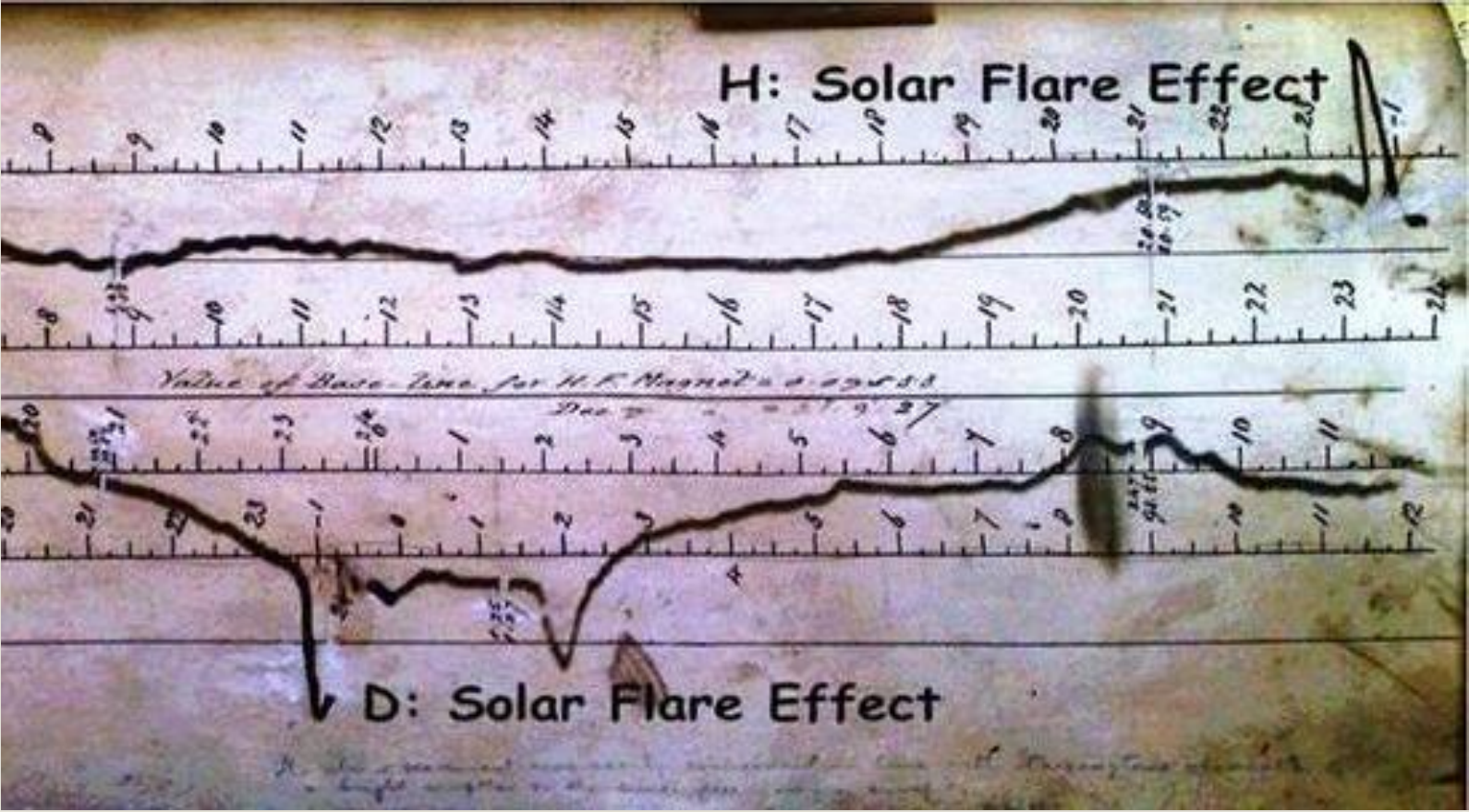
2 Centro de Estudios Astrofísicos, Gimnasio Campestre

3 Space Sciences Laboratory, University of California, Berkeley, USA



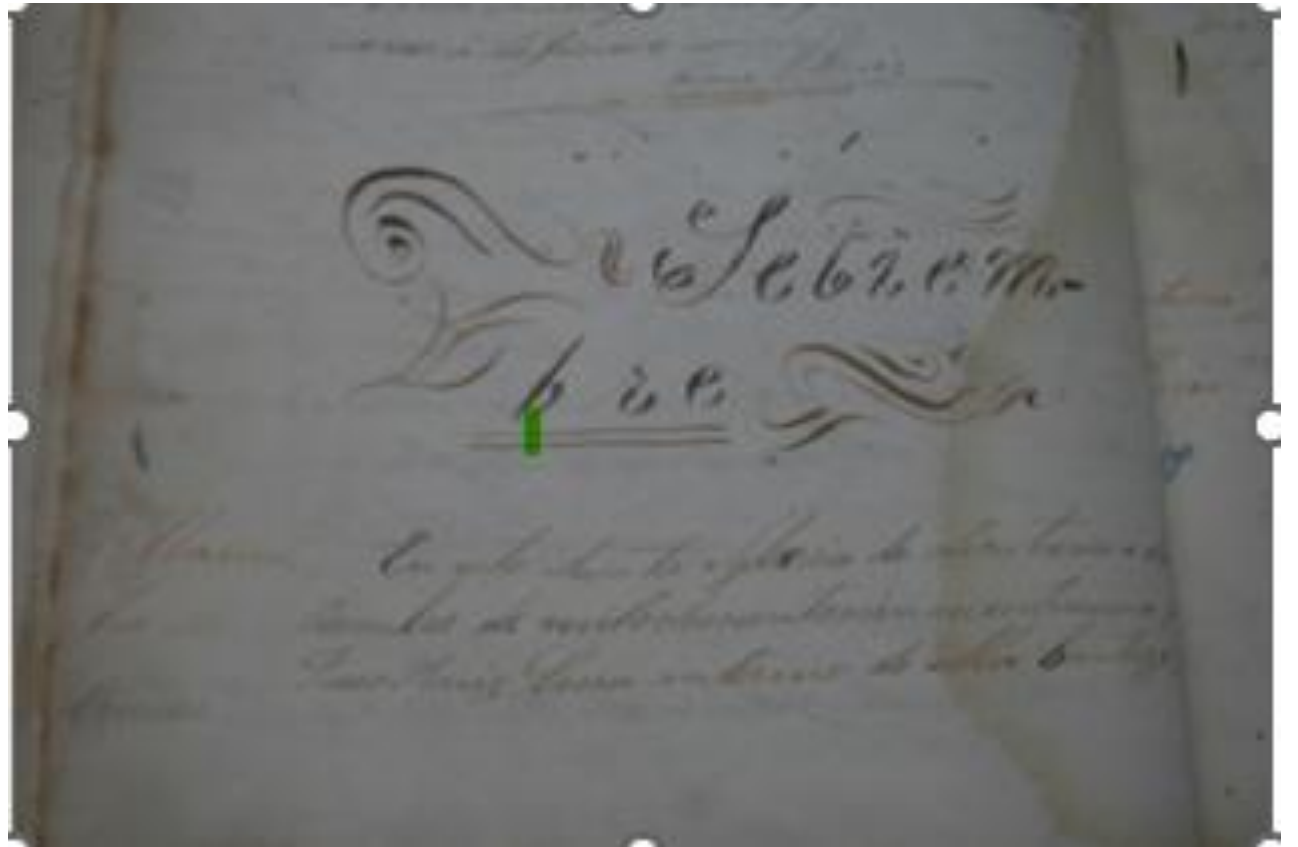


EVENTO CARRINGTON 1 SEPIEMBRE 1859





LA AURORA BOREAL OBSERVADA EN
MONTERIA SEPTIEMBRE 2 DE 1859



THE AURORA BOREALIS.

THE BRILLIANT DISPLAY ON SUNDAY NIGHT.

PHENOMENA CONNECTED WITH THE EVENT.

Mr. Meriam's Observations on the Aurora—E. M. Picks Up a Piece of the Auroral Light.

The Aurora as Seen Elsewhere—Remarkable Electrical Effects.

The present generation have listened with wonder and admiration to the stories their fathers and mothers have told them of auroras and meteors. They have opened ears and mouths and eyes as they heard of stars falling from the heavens like rain, of the sky at night becoming red as with blood, and in the daytime of its being so darkened that stars were visible. Few have had opportunities of witnessing these sublime displays; but on Sunday night the heavens were arrayed in a drapery more gorgeous than they have been for years. The phenomena then witnessed are worthy recording and compar-

ELECTRIC STORM A MYSTERY.

Marconi Cannot Account for the Strange Phenomenon of Nature.

William Marconi, inventor of wireless telegraphy, discussed the curious interruptions which the land wires and cables over a large part of the world suffered on Saturday from earth currents of electricity last night at the Holland House. The telegraph system of both the United States and England were out of order, and the cable companies reported that they could only work slowly and with difficulty on account of a disturbance which affected every part of their wires as far east as the Irish Sea.

This magnetic storm, according to Mr. Marconi, was only an unusually severe manifestation of a common phenomenon. The Pacific cables, he said, are particularly subject to it, and are hampered nearly every day, and as ill-luck would have it, generally in the busiest hours of the twenty-four.

"The earth currents," he said, "are of the same nature as the currents which the ordinary telegraph and cable currents use. They are continuous. In sending a message the operator breaks the current so as to produce the dots and dashes of the code, but when a magnetic storm is in progress the earth current takes possession of the wire, and is so much stronger than the current generated by the company that it has control, and the operators

lost and turned off their own batteries. They endeavored to make use of the current supplied by the earth itself, but were unable to make this economical plan work out well.

"I can't help being a little glad that the telegraph companies have had this object lesson," added the inventor. "Wireless is affected by certain things which do not hinder the ordinary lines, but in this matter we have the advantage."

He explained the immunity of the wireless system by the fact that it employs an oscillating current, which he illustrated by a continuous wavy line drawn between two poles. The earth current is of a different character, and does not in consequence interfere in any way with his own system.

Mr. Marconi would not hazard an opinion as to what causes the sudden development of this earth current. It is usually associated with a display of aurora borealis, but the electrician would not go on record as believing that it is caused by the aurora itself, or some cause which has another manifestation in the display of the northern lights.

There seems to be, he said, somewhere, not far from the north pole, a point of high potentiality which makes the aurora borealis visible. The only cause that Mr. Marconi would suggest for greater electrical activity on the earth was sun spots, but these, he admitted, might really have little to do with it. The whole question is, he said, still in the realm of theory and nothing has as yet been conclusively proved about it.

Mayo de 1921

MONDAY, MAY 16, 1921.

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EP

11

MAGNETIC TREMORS EXPECTED TO PASS WITHIN 48 HOURS

Great Group of Sun Spots Is
Moving Away From the
Earth by Rotation.

SHOWED AT UNUSUAL TIME

Their Reappearance Is Seven
Years in Advance of the

these occurrences.

"Several years ago I for some time compared photographs of sun spots and solar observations, with the records taken, day by day, at the magnetic observatory which the Government maintains near Cheltenham, Md. That comparison did not prove there was direct connection between certain forms of sun spots and the earth's magnetism.

Moved Across Sun's Centre.

"There are two periods of the year when the spots move straight across the sun—usually about June 3 and Dec. 5. This group of spots has moved straight across the centre of the sun. Sometimes they follow an elliptical path across the sun, and when large spots follow the elliptical path their influence upon the earth's magnetism does not appear to be as great as when they cross the sun's centre.

"We took a photograph of the sun on April 11 this year, when there was a spot in the same position as the group that appeared yesterday, but the April spot was not nearly as large as this one and not as agitated.

"This is not the largest sunspot grouping I have observed. I recall one about 150,000 miles in diameter some years ago. But this spot is larger than those that were observed in 1917, when the maximum cycle for sun spots was reached, and is much larger than is usual at this period of the cycle.

"The consensus of opinion is, and I think it is proven by observations, that these sun spots occupy areas of agitation on the solar surface. At this period of revolution the sun may be agitated so as to form fairly large spots, which disappear and sometimes reappear. At the maximum of the cycles, every eleven years, the spots are

turbances accompanying the electrical storm, between Fifty-seventh Street and the Grand Central Station. The automatic signaling and switching devices and the telephone and telegraph systems of the roads immediately stopped. Fumes came from the insulation of electrical wires in the tower, and dense smoke followed.

Disturbs Park Avenue Residents.

While all outgoing and incoming trains were stopped, the Fire Department extinguished the fire in the tower, but not until the residents of many Park Avenue apartment houses were coughing and choking from the suffocating vapors which spread for blocks.

While repair work was being done on the electrical system, the switches were turned by hand and trains rolled in and out of the station, half an hour or more late. The Grand Central Station in the meantime had become crowded by thousands.

The brilliant sky effects continued all Saturday night and were visible at dawn yesterday. Sunrise drowned them out. Beautiful effects preceded the break of day. The aurora borealis, which had draped the heavens in varying tints despite the bright moonlight, held its own easily against the first glow in the east. As the glow grew brighter the shimmering streamers and sheets of pink, yellow, orange and faint violet seemed to coalesce into a steel-colored arch, extending from horizon to horizon, shaking and vibrating, growing dim for a time and then standing out distinctly again.

The steel color faded into a pale yellow, which spread itself with the characteristic trembling, wavy effect of the aurora borealis over the whole vault of the sky. An orange shade began to rise

TORMENTA SOLAR DE
3-5 Agosto 1972

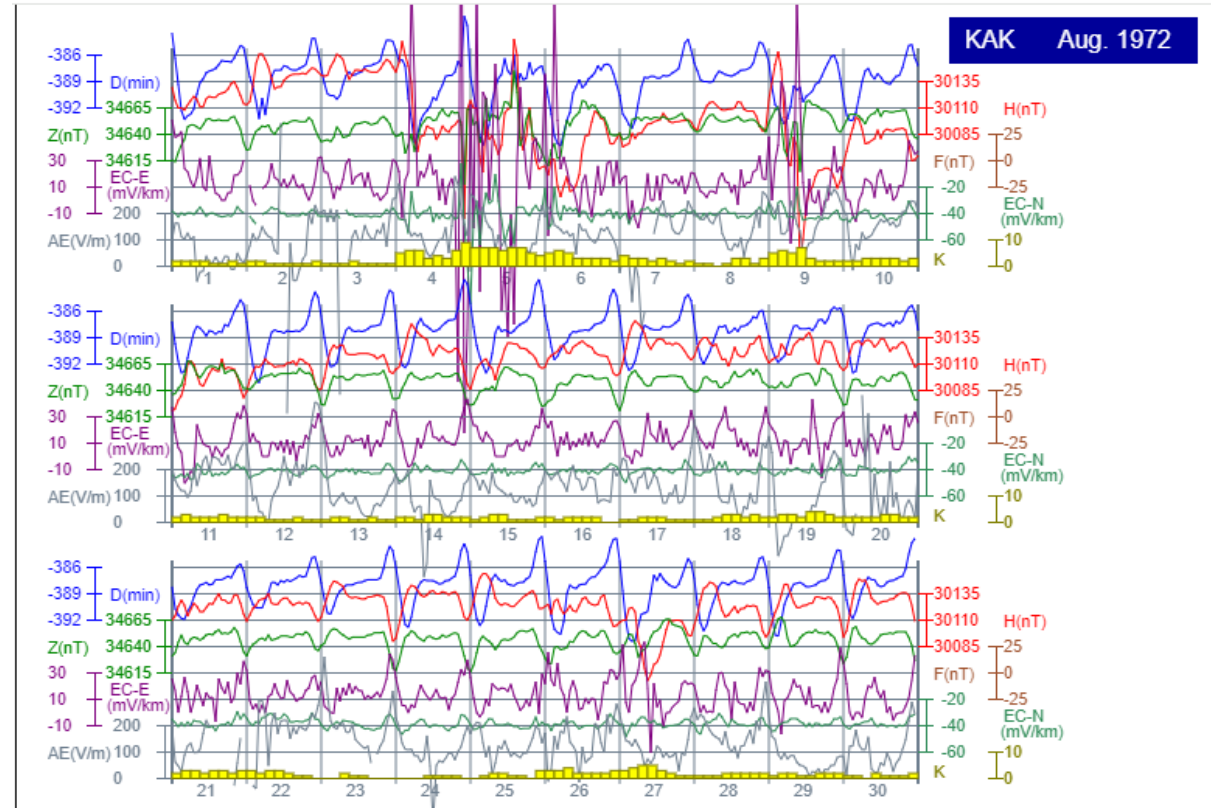
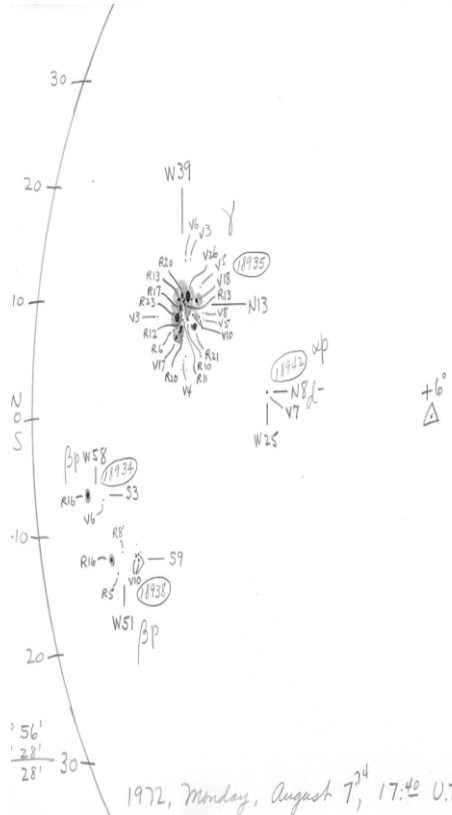
AGOSTO DE 1972

Viento solar: 3080 Km/s

Imp. repentino 300-486 nT India

dB/dt excedió $\sim 2,000$ nT/min

Ibertson y Thorson (1974) encontraron varias compañías eléctricas de Estados Unidos y Canadá que informaron de problemas de suministro eléctrico leves a fuertes entre el 4 y el 5 de agosto de 1972. Fuertes perturbaciones de corriente inducida en Maryland y Ohio. Según Odenwald (2015), se informaron importantes oscilaciones de voltaje e interrupciones del suministro eléctrico en los estados del norte de Estados Unidos y Canadá



AGOSTO DE 1972



Tucker (2006, Cap. 15, p. 177) escribió que “... el 4 de agosto (1972) la aeronave TF-77 informó de unas dos docenas de explosiones en un campo minado cerca de Hon La Vietnam del Norte en un lapso de tiempo de treinta segundos... Finalmente, la Marina concluyó que las explosiones habían sido causadas por las perturbaciones magnéticas de las tormentas solares, las más intensas en más de dos décadas”. (Knipp, et al., 2018)



Vast Sun Flare Observed

This enormous flare cloud more than 80,000 miles long exploded on the sun's fiery surface three days ago and is expected to disrupt short-wave communications this weekend. Picture was made by two

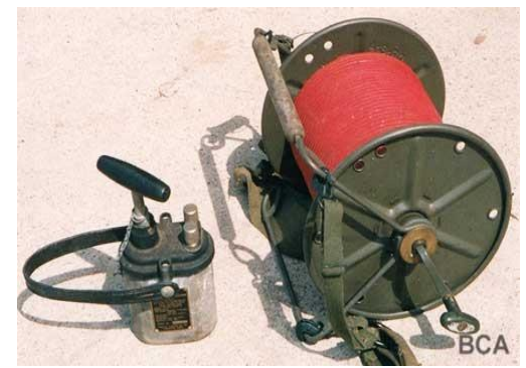
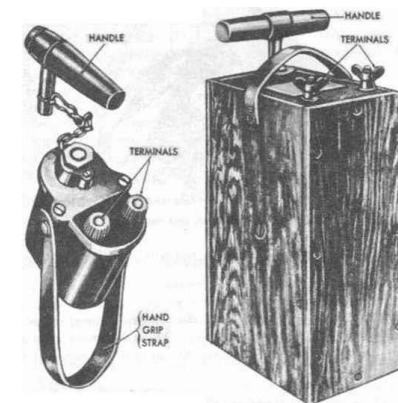
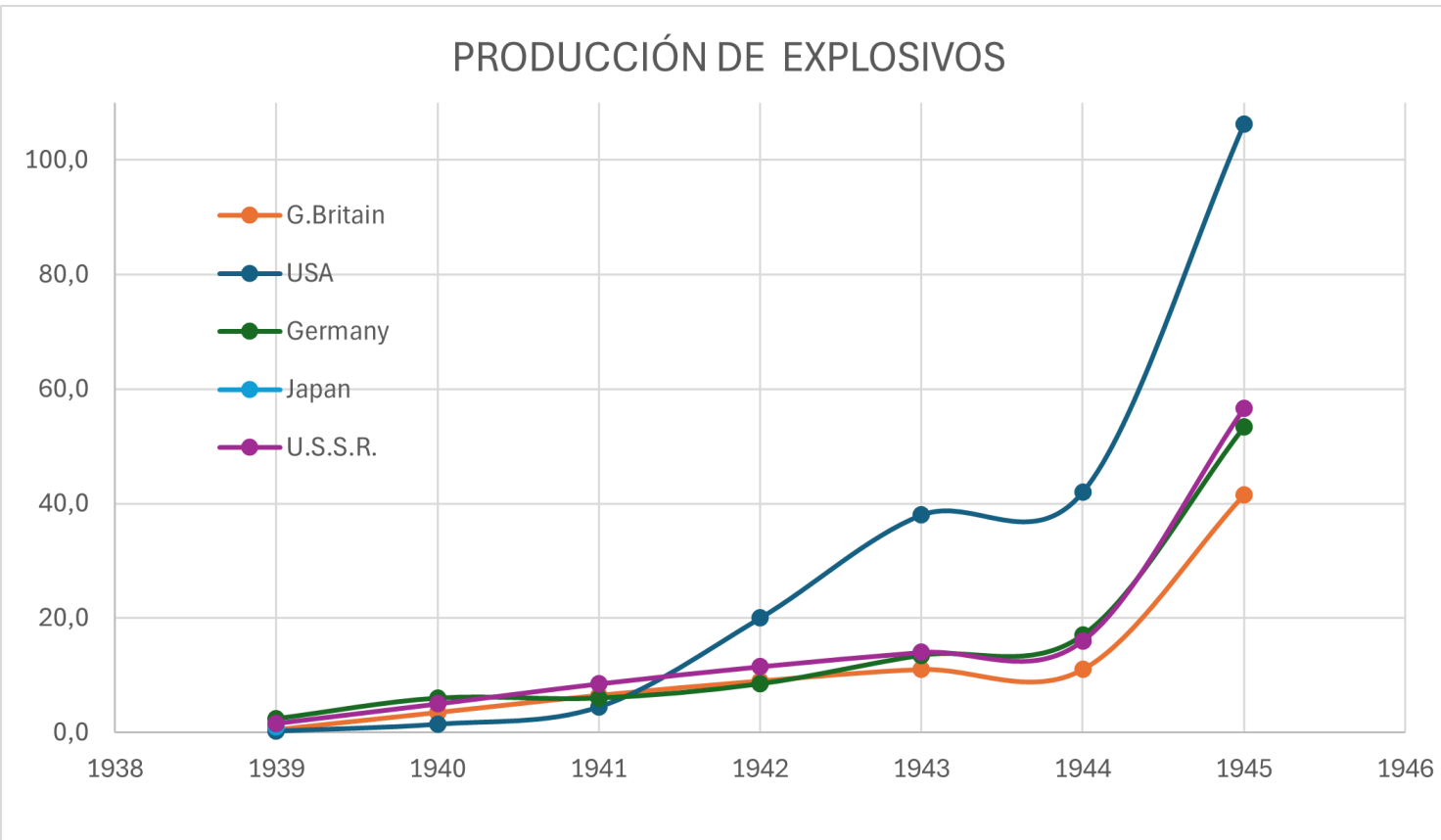
Cal Tech students, Doug Rubin and David Glackin, at Big Bear Solar Observatory. The flare, largest in more than a year, was visible 4 hours. Clock shows GMT 8:43:41 p.m., when photo was made.

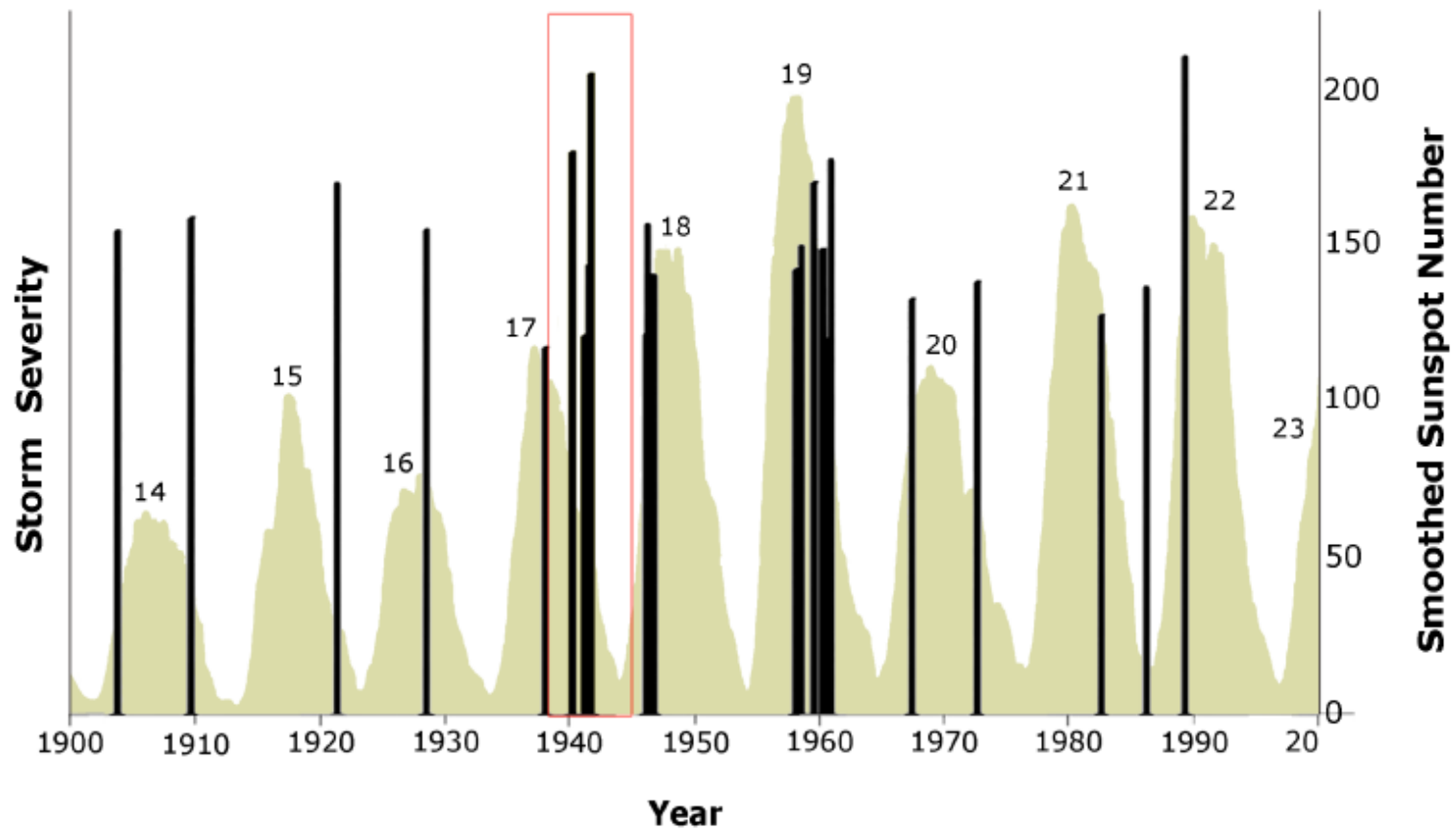
Sun Telegram 5 agosto 1972

PRODUCCIÓN DE EXPLOSIVOS

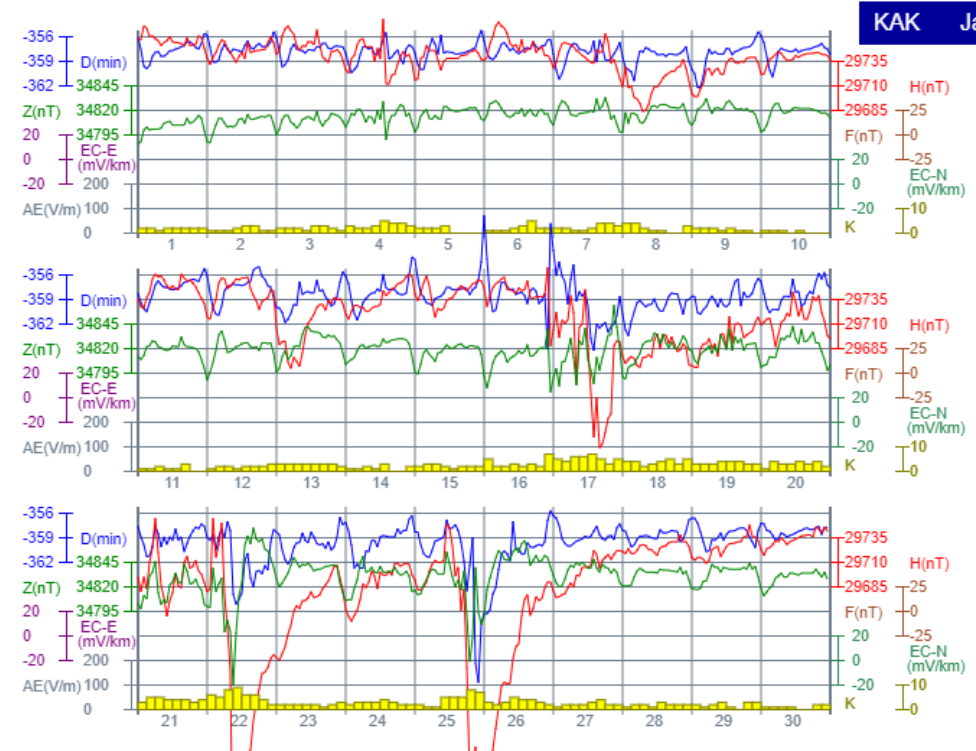
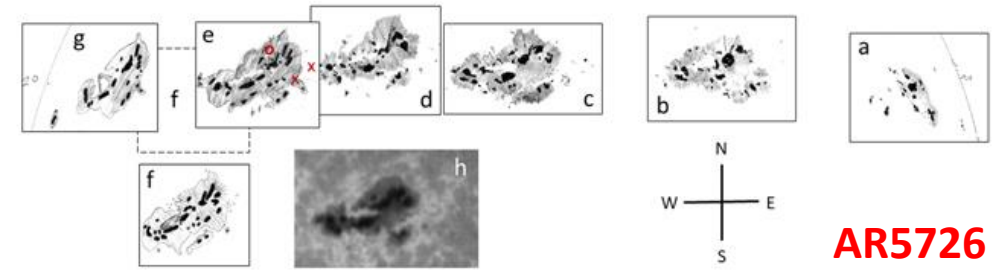
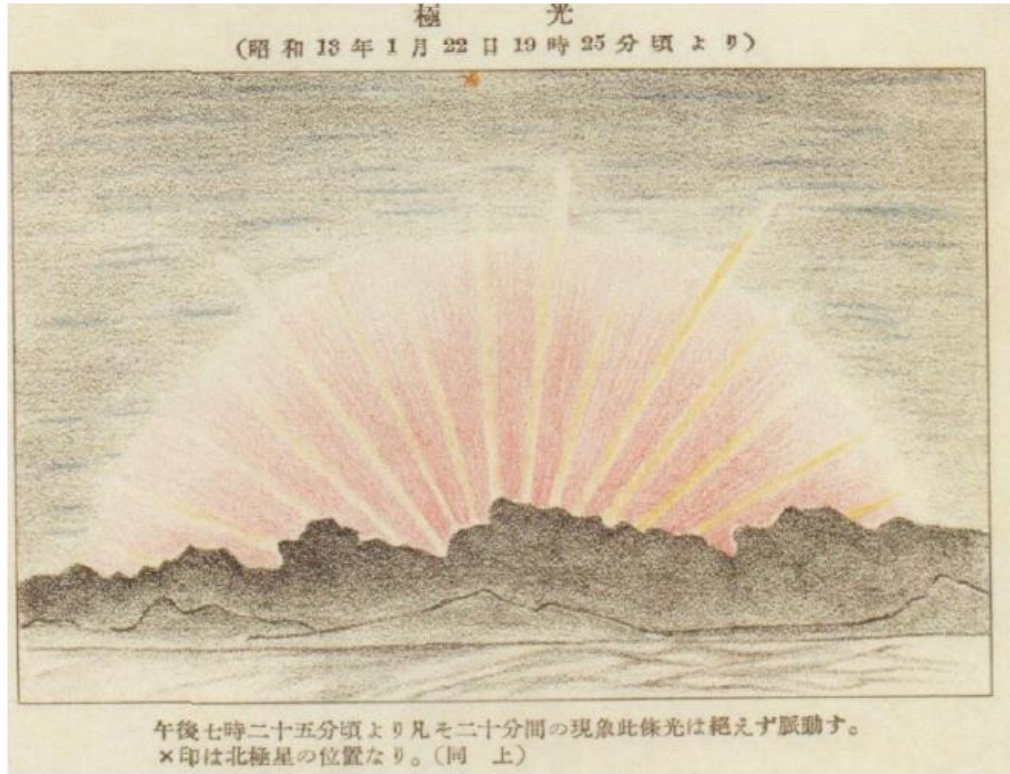


PRODUCCIÓN DE EXPLOSIVOS





TORMENTA SOLAR DE ENERO DE 1938



23 Enero

SUNDAY, JANUARY 23, 1938

Violent Magnetic Storm Disrupts Short-Wave Radio Communication

Transoceanic Services Transfer Phone and Other Traffic to Long Wave Lengths as Sun Spot Disturbance Strikes

Special to THE NEW YORK TIMES.

WASHINGTON, Jan. 22.—A severe magnetic storm, starting at 12:30 A. M., Eastern standard time today, completely disrupted short-wave radio transmission and greatly disturbed all magnetic elements.

The storm was reported to the Coast and Geodetic Survey by Albert K. Ludy, observer in charge of its Cheltenham Magnetic Observatory in Maryland.

The survey's experts said that the storm might be accompanied by auroral displays visible as far south as this city.

pany the appearance of large spots on the sun, which at this time are more frequent, since we are approaching the maximum of the sun-spot cycle."

Operators in charge of the overseas telephone and telegraph circuits of the American Telephone and Telegraph Company and RCA Communications reported yesterday that for the past several days unusual conditions had been experienced on the short radio waves.

An operator of RCA Communica-

26 Enero

Aurora Borealis Startles Europe; People Flee in Fear, Call Firemen

Britons Thought Windsor Castle Ablaze—Scots See Ill Omen—Snow-Clad Swiss Alps Glow—Short-Wave Radio Halts

Special Cable to THE NEW YORK TIMES.

LONDON, Jan. 25.—The most brilliant display of an aurora borealis in fifty years held Britons spellbound over a wide area of this country tonight. From 6:30 to 8:30 P. M. the people of London watched two magnificent arcs rising in the east and west, from which radiated pulsating beams like searchlights in dark red, greenish blue and purple.

During this period all transatlantic radio communication was interrupted, and it was not until 11:30 A. M. that normal service was resumed. From an airplane the display looked like "a shimmering curtain of fire." A big spot had been noted on the sun during the week-end and some scientists anticipated

Grenoble said that a similar aurora borealis had not been seen in Western Europe since 1709.

Bermuda Witnesses Phenomenon

Special Cable to THE NEW YORK TIMES.

HAMILTON, Bermuda, Jan. 25.—A brilliant exhibition of an aurora borealis brought all Bermudians out of their homes at 6:15 o'clock tonight to witness the phenomenon, seen here only on the rarest occasions. The sky was brilliantly lighted with dark red streamers, flashing like searchlights. Many persons thought the light was caused by a ship afire at sea. Steamship agents took the precaution of checking with wireless stations to learn if there had been any S O S calls. The display lasted about three quarters

Enero 23: España

Estalló en Algeciras un depósito de municiones

Gibraltar, enero 23. (A. P.) — Hoy se sintió en esta ciudad una tremenda explosión que, según informes autorizados, provino de un gran depósito de municiones de los rebeldes en Algeciras. Se agrega que varios soldados de la guarnición rebelde han sido arrestados por sospechas de que estén complicados en el suceso.

26: Francia

14 Killed in Explosion of Grenades in Paris; Ammunition Was Seized in Cagoulard Raids

By P. J. PHILIP

Wireless to THE NEW YORK TIMES.

PARIS, Jan. 26.—Fourteen men, of whom five were soldiers, were killed this morning in the Paris suburb of Villejuif by the explosion of 3,000 hand grenades which recently had been seized in the depots of Cagoulard plotters.

So powerful was the explosion that bodies were scattered for a distance of nearly 200 yards. The police laboratory, from which the cases of grenades were being moved to a military depot at Versailles, was partly wrecked and the windows of houses for nearly a mile round were shattered.

The fact that the ammunition was part of the big supply of the Cagoulard organization, which was alleged to be plotting the overthrow of the government has given

ratory where they had been stored. Some cases had been already loaded into the motor lorry when it is believed that one of them was dropped. Its explosion caused others to explode. Only one man, a chemist named Gerard, taking part in the operation, escaped.

At the first blast he threw himself down on a bank of earth from which he had been directing the work. Two painters occupied some distance away were injured and the trucks on which the grenades were being loaded were shattered and burned.

Albert Sarraut, Minister of the Interior, went at once to Villejuif and ordered an inquiry.

Among the victims was René Schmutz, chief engineer of the

27: Escocia

6 KILLED IN SCOTLAND BY EXPLOSIVES BLAST

12 Hurt as Flame Shoots Up 200 Feet at Ardeer—4 Towns Rocked by Detonation

Wireless to THE NEW YORK TIMES.

GLASGOW, Scotland, Jan. 27.—With a terrific detonation that shook four towns, a column of flame 200 feet high shot up from one of the world's biggest explosives factories at Ardeer, Ayrshire, this afternoon and for some time the gravest fears were felt for 3,000 workers known to be within the grounds.

As relatives of workers from Saltcoats, Stevenston and Irvine—where many windows were shattered—rushed toward the factory in automobiles, on bicycles and afoot, it was announced that five men and one woman had been killed and twelve others had been hurt.

The factory, which is working at high pressure on the British rearmament program, is one of the Imperial Chemical Industries group and it stretches many miles amid

Enero 27: Indonesia

29: Italia

dida y de seguro, que el asunto se-
rá sometido al parlamento, hoy en
la sesión inaugural.

Fábrica de explosivos estalló en Batavia hoy

BATAVIA, enero 27. (Associa-
ted Press para «El Espectador»).
Nueve personas perecieron y treinta
y seis quedaron gravemente
heridas, con motivo de una vio-
lenta explosión ocurrida en una
fábrica de explosivos en Rembarg.

Al presente se adelanta una de-
tenida investigación con el fin de
averiguar si hubo manos crimina-
les.

EN ITALIE UNE TERRIBLE EXPLOSION détruit la poudrière de Segni 25 MORTS - 300 BLESSÉS



M. Mussolini sur les lieux de la catastrophe.

(Téléphoto Keystone Rome-Paris.)

Une violente explosion s'est produite à peu de distance de M. Starace, secré-

15 KILLED IN ITALY IN MUNITIONS BLAST

200 Are Injured in Explosion
Started by a Fire in Large
Factory Near Rome

KING RUSHES TO SEE RUINS

Queen and Mussolini Comfort
Wounded—Warning Pre-
vents More Casualties

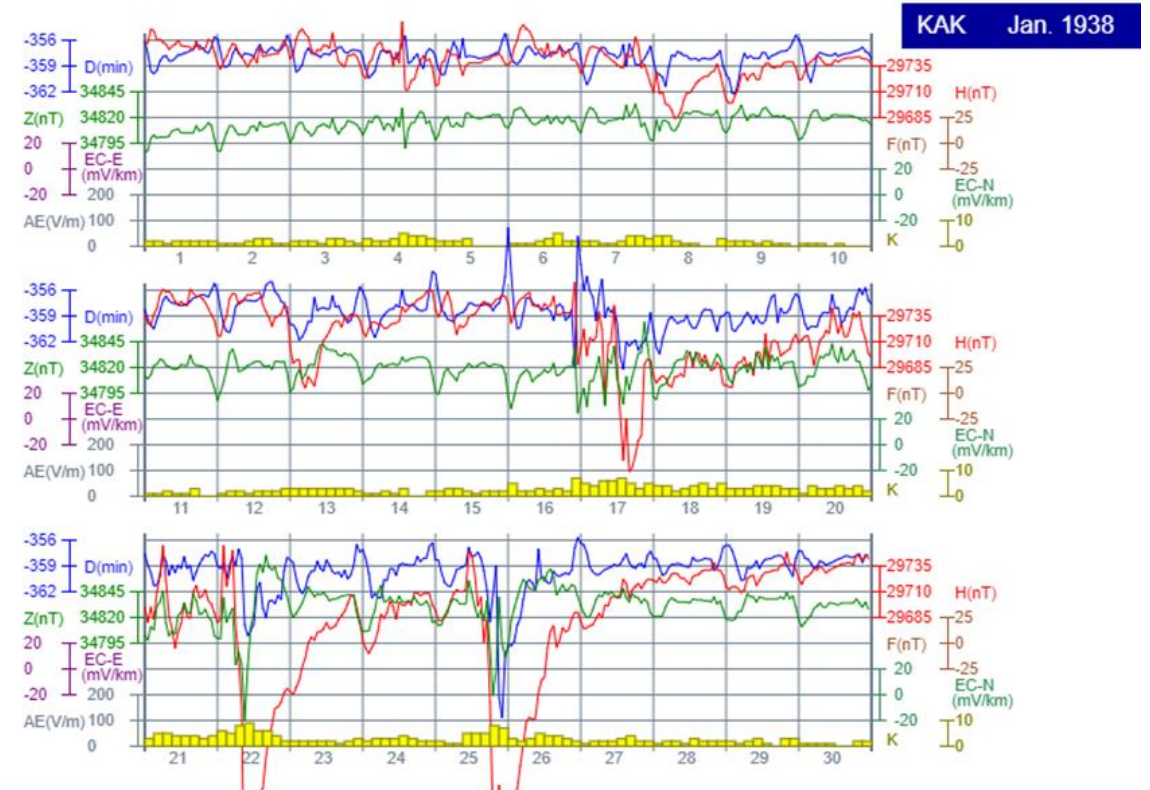
Wireless to THE NEW YORK TIMES.

ROME, Jan. 29.—Two violent ex-
plosions of munitions in a factory
near Segni, a small town thirty
miles from Rome, killed at least
fifteen men, injured about 200 and
wrecked one wing of the building.
The damage was estimated at sev-
eral hundred thousand dollars.

Fifteen bodies have been removed
from the wreckage. Only thirty
workers were employed in the de-
partment in which the explosion oc-
curred. Most of the injured re-
turned to their homes after atten-
tion in hospitals.



FÁBRICAS EXPLOSIVOS Y DEPÓSITOS DE MUNICIONES DE ENERO DE 1938



Marzo – Septiembre 1940

DESTROYER BLAST STILL MYSTERY

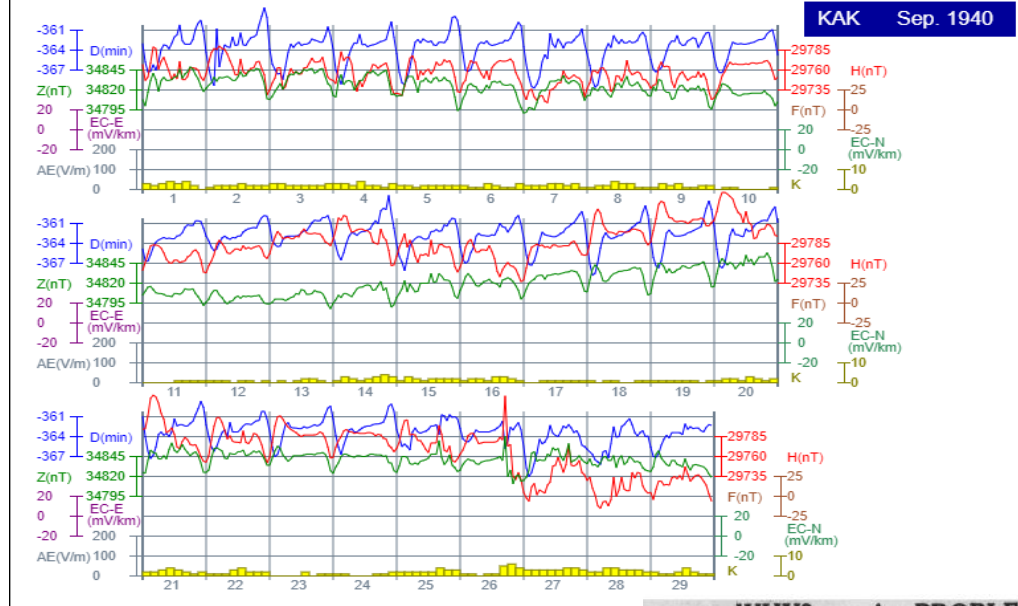
One Man Missing on Ship When **Explosion** Took Place at Newport

Newport, R. I., March 27—(UP)—With one man still missing after he apparently was blown overboard, naval officers sought today to determine the cause of an **explosion** that wrecked a deckhouse aboard the Destroyer King, injured six sailors and shook downtown Newport.

Only available explanation of the blast aboard the neutrality patrol vessel, at anchor a half-mile offshore, was given last night by Captain William E. Farber, patrol squadron commander, who said the **explosion** apparently "was caused by leaking gas." He declined to elaborate.

Captain Farber confirmed that Richard Carl Oehlert, fireman, first class, of Denver, Colo., failed to ap-

(Continued on Page 4)



Electric Currents Of Earth Scrambled By Most Terrific Bombardment Of Sun

New York, March 25—(UP)—The sun's bombardment of the earth diminished in its fury today and the affairs of puny man returned to normal.

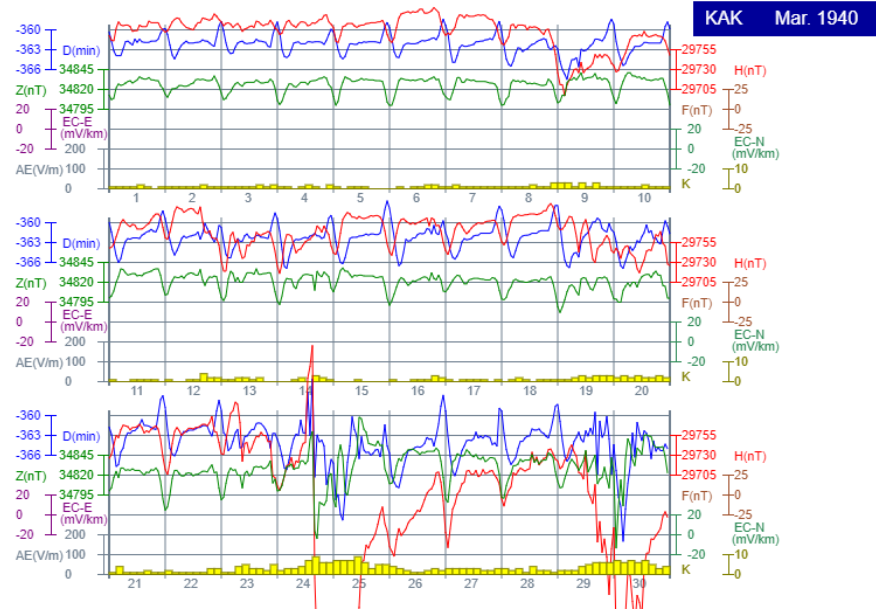
The sun used, not explosives, but electrical impulses and was flinging them through 92,830,000 miles of space at its satellite, the earth.

could recall nothing that had disrupted the system so much. Telegraph companies were unable to send thousands of Easter messages for hours.

The minute place of earth in the cosmic scheme was set forth by scientists. There was a disturbance, a "tornado," on the surface of the sun. This was manifest by the ap-

flash across the northern horizon and **aurora** polaris—southern lights—lit up south polar regions as the result of the impulses reaching the magnetic fields of the north and south poles.

William H. Barton, Jr., executive curator of the Hayden planetarium, said a "tornado" or "twister" brought out seven spots near the center of the sun's face as presented to Amer-



LONDON GETS WORST BOMBING

Powder Plant Explosion Takes Toll Of Fifty

Where Fatal Blasts 'Struck'



Buckingham Palace Struck With Five Explosive Bombs

Smouldering Ruins Of Powder Plant Probed

Tragedy Hits Women of Town

Wandered Streets of Dover All Night Seeking Their Loved Ones

Damage Load of Bombs

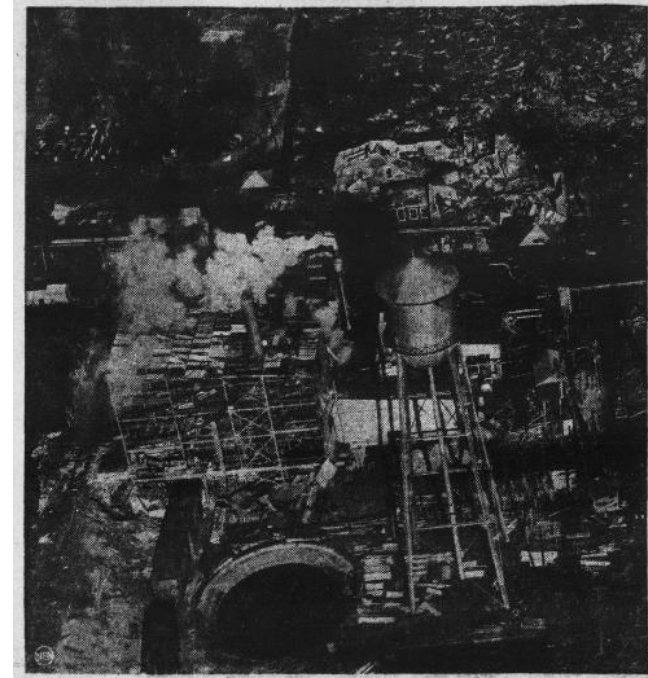
Blinds Show Much Damage

Police Hunt for Bombers

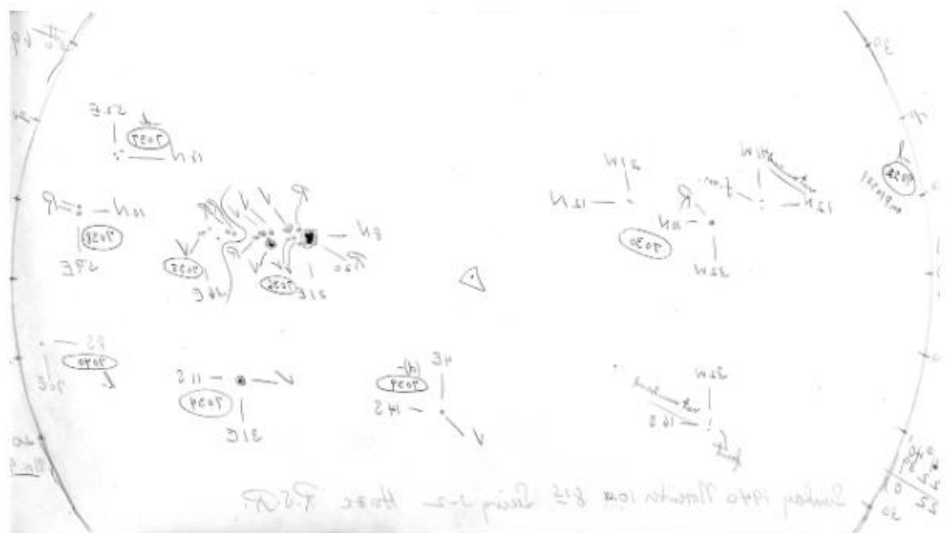
Police Hunt for Bombers

Police Hunt for Bombers

WHY? ... A PROBLEM FOR FBI

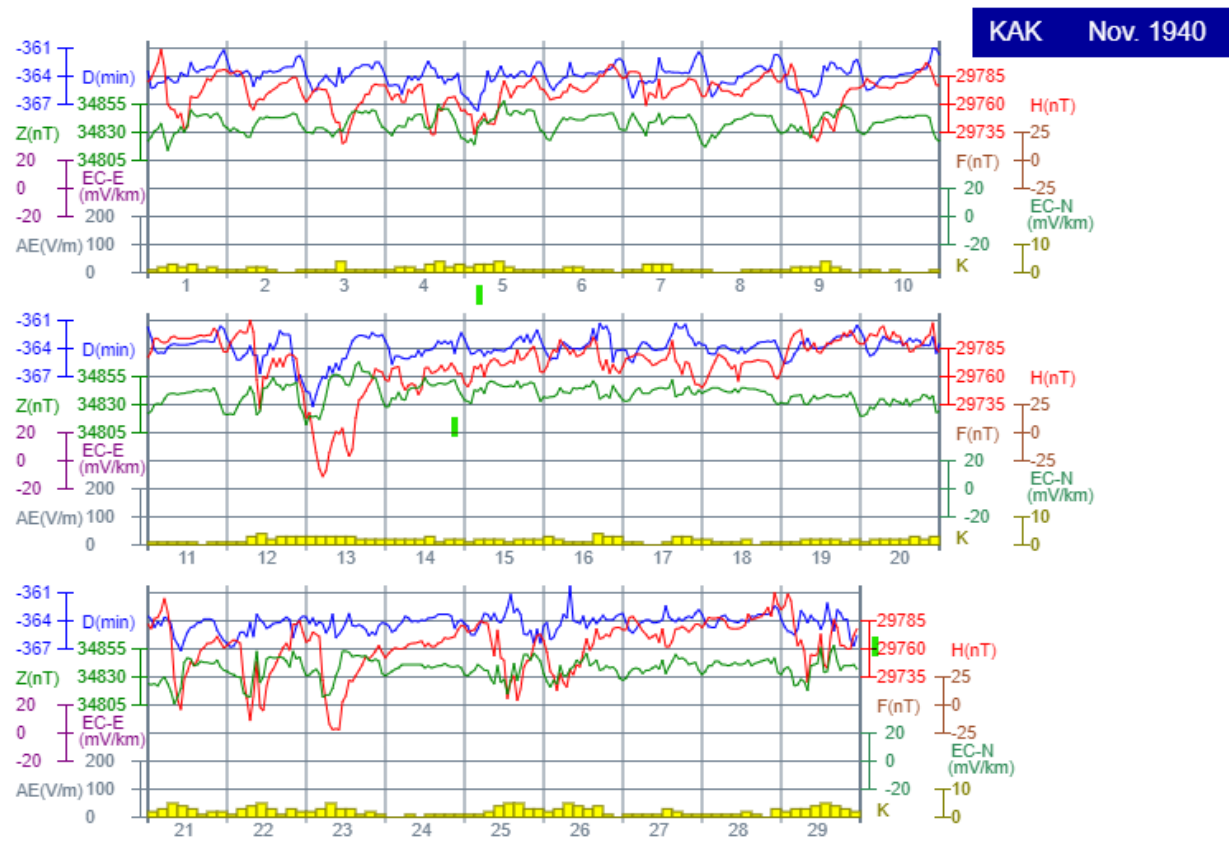


"Brother, when that stuff lets loose, it's something you can't explain." This eyewitness description of explosion at Hercules Powder Co. munitions plant at Kenilworth, N. J., says in words what photo above says pictorially. Pictured day following unexplained blasts, reminiscent of the Black Tom explosion of World War days, the still smouldering ruins, some completely leveled, testify to force of explosion which killed some two score, injured over 150 others, and shattered windows for 50 miles around.



1940

Región 13743



Spectacular Fire Destroys Million of Army Equipment

Sabotage Blamed After Blaze Sweeps Armory In Georgia Capital

ATLANTA, Ga., Nov. 12. (UP)—State Adjutant General Marion Williamson today ordered a national guard investigation into a spectacular fire at the municipal auditorium in which army equipment valued at \$1,000,000 was destroyed.

The investigation was ordered after Burt Wellborn, manager of the auditorium, said the fire was the result of "sabotage."

"It happened up east and I don't see why it can't happen here," Wellington said, "especially when you consider all the new equipment that was stored in the armory."

Capt. J. Hooker of the national guard said army losses included 35 Howitzer sights, 10 range finders, 922 automatic pistols, 12 37-millimeter cannon, 2,500 blankets, and new summer and winter uniforms for 922 enlisted men and 70 officers—adding up to a total value of more than \$1,000,000.

Two 155 - millimeter Howitzers, worth \$25,000 each, were saved.

Damage to the building was plac-

F. B. I. Leads Probe Of 3 Plant Blasts Which Killed 14

Sabotage Clues Sought; Incidents of Violence Elsewhere Investigated

To the Associated Press.

A series of blasts in explosives plants—one of which was engaged in defense manufacture—drew the attention of investigators today in an attempt to determine whether they were connected with possible sabotage efforts.

A three-way inquiry was begun into the explosion in which eight were killed and 26 injured at the plant of the United Railway Signal Co. in Woodbridge, N. J., yesterday. Although there apparently were no indications of sabotage, authorities had not altogether ruled out this possibility. The company makes railroad signal torpedoes and other devices.

Three were killed in the plant of the Trojan Powder Co., Allentown, Pa., which had Army and Navy contracts for explosives. Those killed were in a building where detonators were made.

Four separate agencies pursued independent investigations into this blast. Lehigh County Coroner A. M. Peters concurred with company in-

EL CENTRO BUSINESS BAROMETER
(Third inch, down and drifts west through the two El Centro banks.)
BANK DEBITS
Saturday . . . \$331,627.92
Last Year . . . \$339,241.69

IMPERIAL VALLEY PRESS

Carrying Full UNITED PRESS News by Fast Wire Service and Features of N.E.A., Inc., Central Press Association, McNaught Syndicate, King Features, and Complete Valley News by the Largest Editorial Staff in Southeastern California.

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VOLUME XXXVIII, No. 211 (Five Cents per Copy) EL CENTRO, CALIF., TUESDAY, NOVEMBER 12, 1940 PHONE 300 THE POST-PRESS

EXPLOSIONS ROCK THREE U. S. FACTORIES

National Defense Dooms Pastoral Peace



EUROPE'S FATE WAVERS

By UNITED PRESS
Soviet Premier Vladimir M. Molotov met with Adolf Hitler Tuesday for discussions which German sources believed centered on the subject that Russia, Germany, Italy, Japan and satellite states will negotiate in Hitler's proposed "new world order."
The discussions were reported to proceed secretly as the British, following over the outcome of the Berlin conference—and the Greek lowered its tanks at war. Greek reported hold of French resources against the Italians on the Italian mountains and London said Germany's northern part of Danzig—

12 Killed, Scores Hurt in Eastern Industrial Areas

FBI Launches Investigation Following Three Tragedies Timed Within Hour; Two Plants Had Government Orders

By UNITED PRESS—
Three terrific plant explosions in the industrial east, a spectacular fire in the south that destroyed \$1,000,000 worth of army material, and a suspicion of sabotage at a far western shipyard engaged in government work were

Winter Hits II S

IMPERIAL VALLEY PRESS

New Blast Hits Chemical Factory

PITTSBURGH, Nov. 18. (UP)—State and federal authorities today investigated a mysterious explosion at the Selden Works of the American Cynamid and Chemical Corp.—the third within a week at plants of the chemical company.

The latest blast yesterday wrecked half of a large building at the Selden Works in nearby Bridgeville, causing damage estimated at \$250,000 and inflicting minor injuries on two workmen. Twenty three other men escaped injury.

lice were reported to have begun an immediate investigation to determine whether sabotage was responsible.

Last Tuesday, an explosion at the company's Burton Explosives Division near Edinburg, Pa., killed three workers, while a blast at the firm's Calco Chemical Division at Bound Brook, N. J., killed a plant superintendent and injured three workers. Neither of these plants was said to be working on defense orders.

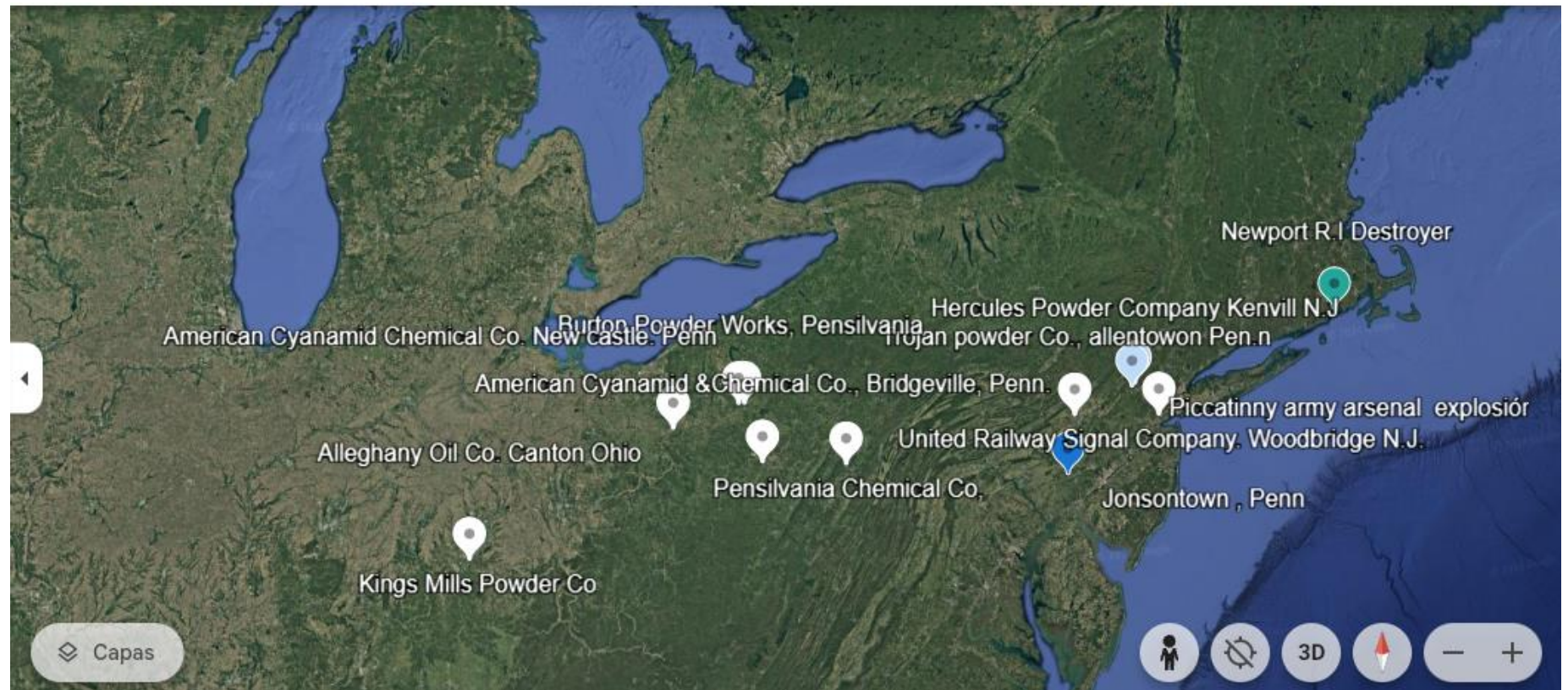
Almost simultaneous with the

INTENSA GUERRA DE SABOTAJE ES EFECTUADA EN E. UNIDOS

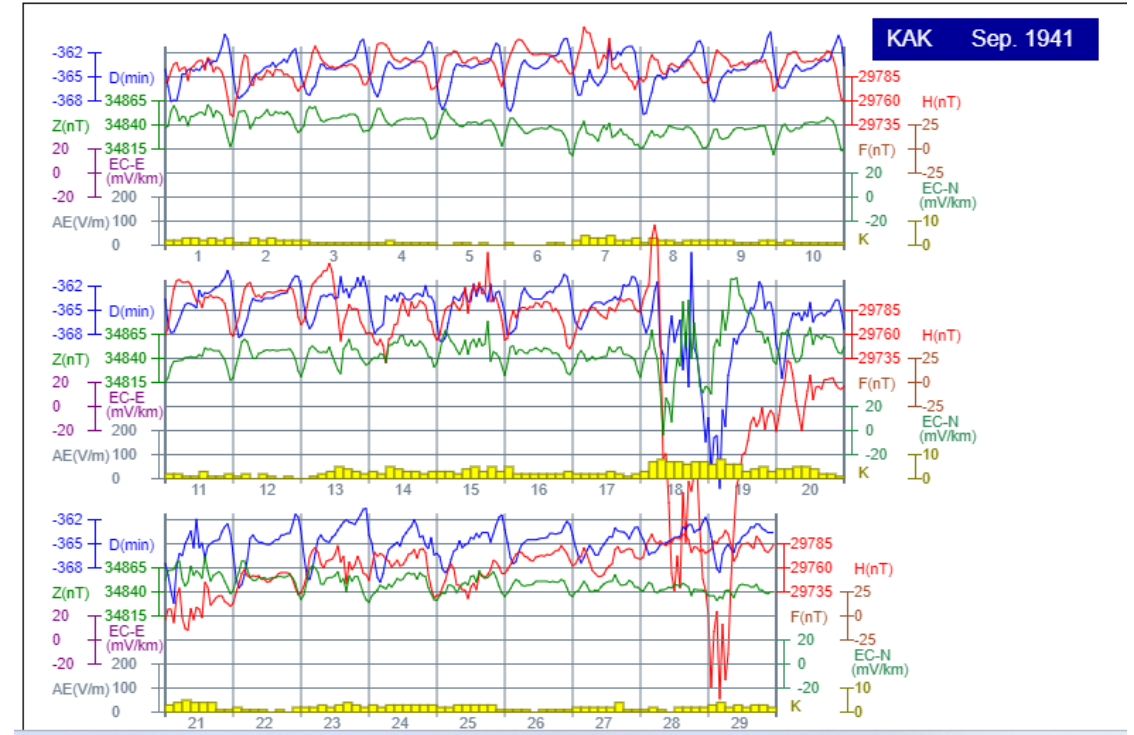
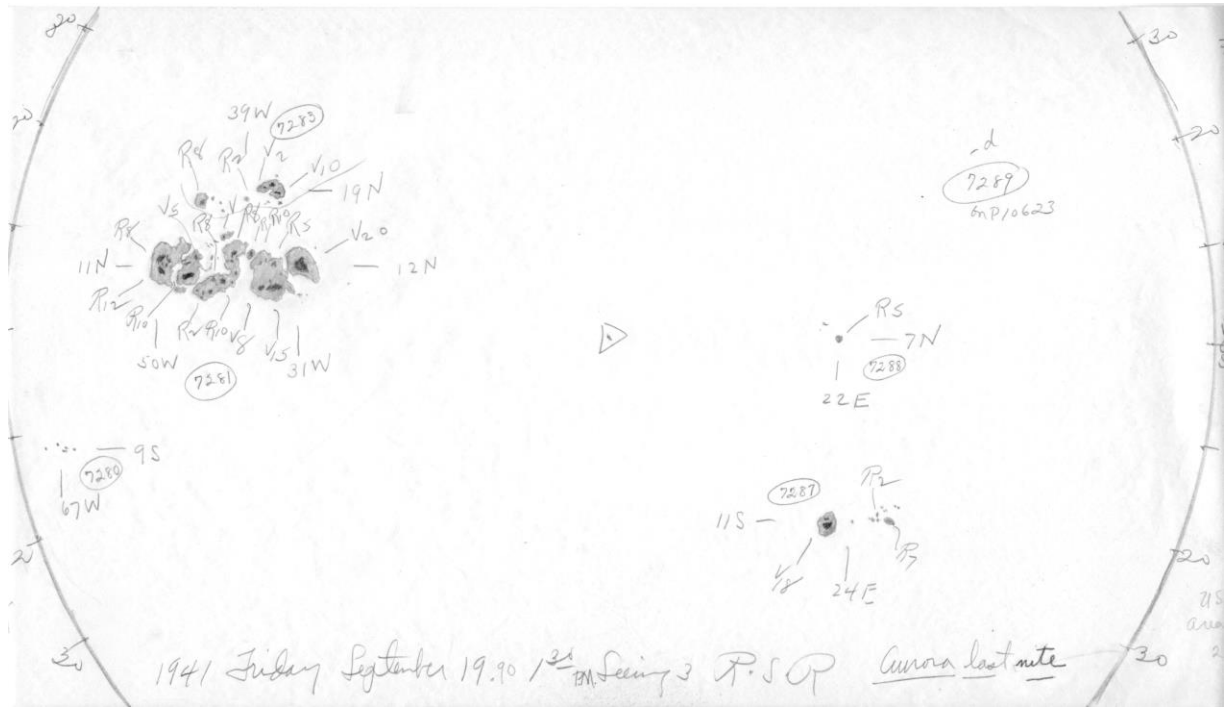
LOS "CASOS" SE MULTIPLICAN EN TODAS PARTES

La planta de la United Railway Signal Company, de Woodbridge, que acaba de perder catorce edificios en las explosiones de ayer, fabricaba torpedos para el gobierno. El mismo día ocurrieron las explosiones en la Trojan Powder Company, de Allentown, que tiene contratos de explosivos, y en la planta de dinamita de la Burton Powder Works, de Edinburgo, ambas situadas en el Estado de Pensilvania.

Simultáneamente llegaron noticias de otras dos explosiones no menos ominosas, una en los depósitos principales de petróleo de la Alleghany Oil Company de Canton, Ohio, y otra en el pozo número 1 de la Phillips Petroleum Company, de Oklahoma City. En la primera empresa trabajan en el turno de la noche, al ocurrir el desastre, unas quince personas, ninguna de las cuales resultó herida. K. K. Kennedy, el capataz de la firma Phillips, dice que la causa de la explosión en estas propiedades es un misterio, puesto que al ocurrir la misma nadie estaba trabajando en los pozos.



SEPTIEMBRE 1941



EFECTOS DE LA TORMENTA SOLAR DE 1941

NORTHERN LIGHTS SOON

'Unexpected' Sun Spots May Cause Magnetic Storms

Severe magnetic storms and displays of the northern lights may occur soon in the New York City area, officials of the American Museum of Natural History declared last night in announcing the unexpected appearance of sunspots yesterday.

Charles A. Federer Jr. of the Hayden Planetarium, who is secretary of the Amateur Astronomers Association, took photographs of the sunspots, which he described as "an enormous group" and "more or less unexpected because we are approaching a period of minimum activity on the sun."

The sunspot group, he said, measured 150,000 miles from one end to the other, the largest spot, in the sun's center, being about twice as large as the earth.

SHORT WAVE BETTER AS 'STORM' ABATES

Magnetic Disturbance Fades—Another 'Blitz' Feared

The magnetic storm that caused so much trouble on wire and radio channels during the past few days appeared yesterday to be abating, although radio men warned that another "ethereal blitz" might be coming.

The National Broadcasting Company and Columbia Broadcasting System listening posts reported "fairly good" reception on transatlantic channels late yesterday following a gradual improvement from the fade-out of Friday night. RCA Communications reported channels "nearing normal." London, Rome, Berlin and Brazzaville, Africa, a few of the foreign stations by which the general condition of oceanic reception normally is judged, were audible "but still below par."

New Yorkers were treated to no more auroral displays. Twenty-five passengers and the crew of a TWA stratoliner had what was called the "closest view in history" of the Northern Lights Thursday night. It was from an altitude of 19,000 feet—nearly four miles—as the airliner was en route from Chicago to La Guardia Field. Captain Russ Black, pilot, said the sight was the most spectacular he had ever witnessed.

Aurora Borealis Gives City a Show As Sun Spots Disorganize Radio

Display of Northern Lights Unparalleled in Years Seen From Buffalo to Virginia—Dodger Fans See Red as Broadcast Fails

Sun spots and the aurora borealis yesterday and last night played havoc with radio communications, but treated New York and the Eastern Seaboard as far south as Virginia to a display of light unparalleled in recent years.

During the day thousands of Brooklyn Dodger fans expressed themselves forcibly when a broadcast of the game with the Pittsburgh Pirates at Pittsburgh went off the air, with the score 0-0. With nightfall, the Northern Lights took up the performance the sun spots had begun, painting the sky above the city in orange, blue and pale green.

The appearance of spots on the sun and of the aurora frequently coincide, according to the experts, and both affect wireless communication. Last night's aurora, according to observers at the Hayden Planetarium and the United States Weather Bureau, was particularly brilliant.

Clear cool air moving down from the north and the absence of clouds permitted watchers to distinguish the aurora colors, which, according to the Weather Bureau, ranged from orange to green and

Weather Bureau. A similar but less intense disturbance was last reported here last August.

The performance of the aurora apparently began early yesterday morning. Robert A. Coles, assistant curator, according to Mr. Federer, reported seeing the phenomena at about 4:30 A. M. on that day. Last night, after delivering a lecture at the Planetarium, Mr. Coles led the audience out to the entrance of the building and explained the appearance of the lights.

According to the United Press, an aurora was visible in Denver, Colo., and at St. Louis yesterday, while the sun spots—manifestation of gigantic storms on the sun's surface—were observed here the day before.

The troubles of the Dodger fans began at 4 P. M. while Red Barber was broadcasting the story of the Pittsburgh game over WOR. The broadcast was inaudible for fifteen minutes and when it resumed the Pirates had piled up four runs. Thousands of Brooklyn followers meanwhile had telephoned the station and displayed little satisfaction with the explanation that the

13 y 17 de septiembre

Un Buque Finés con Municiones Hizo Explosión

Hubo muchas víctimas. Se cree que fue un accidente, pero las autoridades investigan el caso.

Helsinki, septiembre 13 (Demora do por la censura). (U. P.). Esta noche hizo explosión en el puerto, un buque cargado de municiones. El siniestro causó muchas víctimas, resultando varios edificios averiados y miles de ventanas rotas por la violencia de la explosión.

En los círculos bien informados se tiene la creencia de que esta explosión se deba a un accidente y no a un acto de sabotaje, pero se ha iniciado una minuciosa y severa investigación.

La policía estableció un cordón alrededor del distrito portuario de

Raro Incendio se Presentó Ayer en un Barco en Río

Se investiga si se trata de sabotaje.

Río de Janeiro, septiembre 13. (United Press). — Esta madrugada a las tres estalló un incendio en la popa del vapor Guapore, pequeña nave de 1.200 toneladas de desplazamiento, propiedad de la Compañía Internacional de Transportes Marítimos Irmaos Happet. En el momento del hecho descansaban a bordo unos 20 operarios utilizados en reparaciones. Inmediatamente fueron llamados los bomberos del destacamento de Niteroi, quienes apagaron las llamas luego de tres horas de lucha.

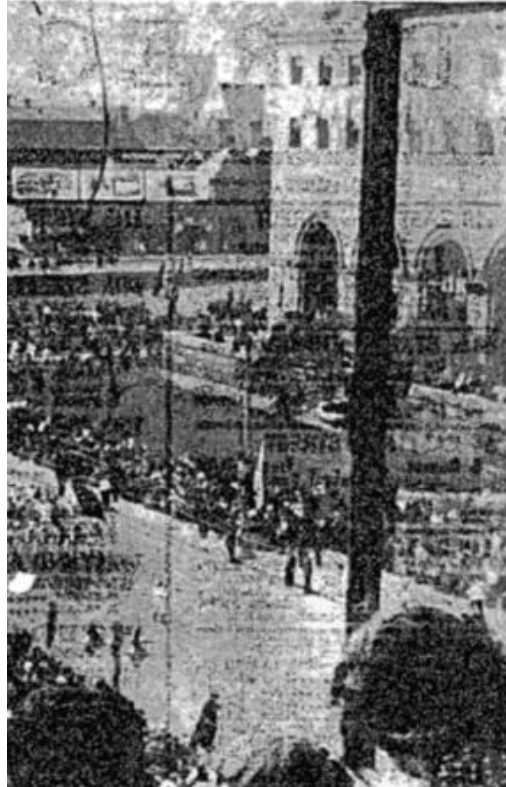
La policía investiga si se trata de un caso de sabotaje.

Hubo también dos explosiones que se atribuyen a accidentes. A las 23 hubo una explosión en una cantina en Punta Areia Niteroi. Asimismo, en el puerto en un depósito se inflamaron 200 kilos de ese explosivo, provocando una grande explosión.

En ninguno de los dos casos hu-

THE NEW YORK TIMES, WEDNESDAY, SEPTEMBER 17, 1941.

REGION PARADE IN MILWAUKEE



KANSAS CITY DARK IN SUDDEN STRIKE

Employees of Light Company Walk Out at Midnight After Washington Ruling

WATER SUPPLY STOPPED

Blackout Affects 400,000, With Street Cars Stalled on Rails, Plane Landings Hit

KANSAS CITY, Wednesday, Sept. 17 (AP)—This city of 400,000 was blacked out by a strike of employees of the Kansas City Power and Light Company at midnight.

The city was left virtually without water. Only one small water-pumping station was operating at 12:30 A. M. with its own supply of power, and station employees said it could not remain in action long.

The walkout followed a ruling by the National Defense Mediation Board in Washington late last night that a dispute between two rival unions came within the jurisdiction of the National Labor Relations Board and the United States Courts of Appeals.

The entire city was in darkness, street cars stalled on the tracks.

The blackout prevented two planes landing at Municipal Airport, but sources there said they probably would make use of Fairfax Field, a military port, across the Missouri River in Kansas City, Kan.

Kansas City, Kan., is supplied by a municipally owned system and was not affected.

Suburban communities in Johnson County, Kan., however, receive their current from the Kansas City Power and Light Company and were blacked out along with Kansas City, Mo.

The strike came virtually without warning as the master switches controlling light and power were pulled at midnight. Telephone service was not affected.

St. Luke's Hospital, one of the city's largest, was entirely without lights.

The controversy grew out of a jurisdictional dispute in which the International Brotherhood of Electrical Workers, an A. F. L. affiliate, sought the right to bargain for employees who were members of the Independent Union of Utility Employees.

The company recently appealed from a Regional Labor Board decision which held that the independent union was company-dominated. That appeal will be heard Oct. 11 in the United States Circuit Court of Appeals.

17 19 de septiembre

Misteriosa Explosión Destruyó 3 Modernos Destuctores Suecos

Las tres naves se incendiaron en los astilleros de la base de Maersgarn. Hubo 31 muertos y 11 heridos. La escuadra pierde el 25 por ciento de sus efectivos. Un cuadro de horror en los muelles.

Estocolmo, septiembre 17 (U. P.). La escuadra sueca ha experimentado hoy un verdadero desastre, a consecuencia de la misteriosa explosión que alcanzó a 3 de sus más modernos destructores, los cuales se hundieron en los astilleros reales de la base de Maersgarn adyacentes a Estocolmo. La lista oficial de víctimas enumera esta noche 31 muertos y 11 heridos.

La explosión ocurrió a bordo del destructor Goteburg que se partió en dos y se hundió inmediatamente. El Klas Uggle y el Klas Horn, gemelos del Goteburg, estaban anclados cerca de este último. Cuando voló el Goteburg, una extensa capa de petróleo ardiente cubrió la superficie del agua. El incendio alcanzó

20.000.000 de coronas suecas. Créese que el tonelaje total de la escuadra sueca del Báltico es todavía mayor que el de la flota alemana que ha sufrido según se informa, pérdidas sustanciales en acciones de guerra con la flota soviética del mismo mar.

Se pide investigación

El gobierno y las autoridades de marina aun investigaban esta noche las causas de la catástrofe. Las primeras informaciones la atribuían al "mal manejo de los torpedos" pero posteriormente se estableció con bastantes visos de exactitud, que el siniestro fue debido a haber estallado una caldera del Goteburg, anclado en la primera base naval del país.

Man Killed by Explosion

●GRAFTON, ILL., Sept. 19—(AP)—One man was killed today in a neutralizing unit explosion at the plant of the Illinois Powder Manufacturing Company near here.

He was tentatively identified as Francis Erwin. He was believed to have been working by himself. A fellow workman had left just before the explosion.

Grafton, a town of a little more than 1,000, was not damaged by the blast.

No other injuries were reported.

The plant makes dynamite.

22-24 Septiembre: Europa y E.E. U.U.

BLASTS IN BRITISH PLANTS

One Person Killed—Output Not Affected, Ministry Says

LONDON, Sept. 22 (AP)—One person was killed and three others were slightly injured today in an accidental explosion at a Royal Ordnance factory in Northwest England.

The Ministry of Supply said "material damage was slight and production will not be affected."

The press association also reported another explosion that caused a large fire in a factory in Middlesex, but said the large staff there escaped without injury.

The blast in the northwest was said to have shaken many buildings in the area and sent debris flying for considerable distances.

Enorme Explosión en una Fábrica de Gasolina francesa

Destruída una parte de las instalaciones.

Nueva York, septiembre 24. (United Press). — Según una noticia transmitida por la radio de Vichy, captada en ésta, se produjo una grande explosión en una fábrica de guerra en Burdeos, resultando destruída una parte de los edificios.

La fábrica estaba dedicada actualmente a la producción de gasolina sintética.

Gran Cantidad de Café Iba a comprar el Ejército Yanqui

no Carlos Concha, quien conversó durante media hora sobre el litigio fronterizo peru-ecuatoriano.

Fue Volada una Fábrica Nazi en Checoeslovaquia

Londres, septiembre 24. (United Press). — La Press Association destaca una noticia de la radio de Moscú, según la cual, centenares de obreros extranjeros de los llevados a Alemania para reemplazar en las fábricas a los operarios alemanes, resultaron muertos y heridos, a consecuencia "de una terrible explosión ocurrida en una fábrica de municiones de Checoeslovaquia".

Hubo necesidad de hospitalizar a 900 heridos.

Agrega que las tropas alemanas rodearon la fábrica cuando otra explosión destruyó gran parte de una fábrica de electricidad.

"Hasta ahora, añadió, las investigaciones nazis han resultado infructuosas".

THURSDAY, SEPTEMBER 25, 1941

BLAST KILLS THREE ON BARGE IN HUDSON

Dredger's Dynamite Goes Off at Watervliet, Rocks Arsenal

WATERVLIET, N. Y., Sept. 24 (AP)—A dynamite blast on a Hudson River dredging barge killed three workmen today, shook the Watervliet arsenal, a few hundred yards distant, and shattered windows in hundreds of buildings along the shore.

Apparently set off when drillers sought to clear a clogged casing with a reamer, the explosion left unharmed a dynamite raft attached to the barge but blew apart one man and hurled the other two into the water.

The dead, all of Buffalo, were Edward Zae, 45; Robert Gallagher, 25, and Frank Wright, 40. A fourth workman, Russell Van Alstyne of Troy, suffered severe cuts.

C. F. Tallman Jr., a garage employe who was watching the dredge

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Explosiones durante septiembre de 1941

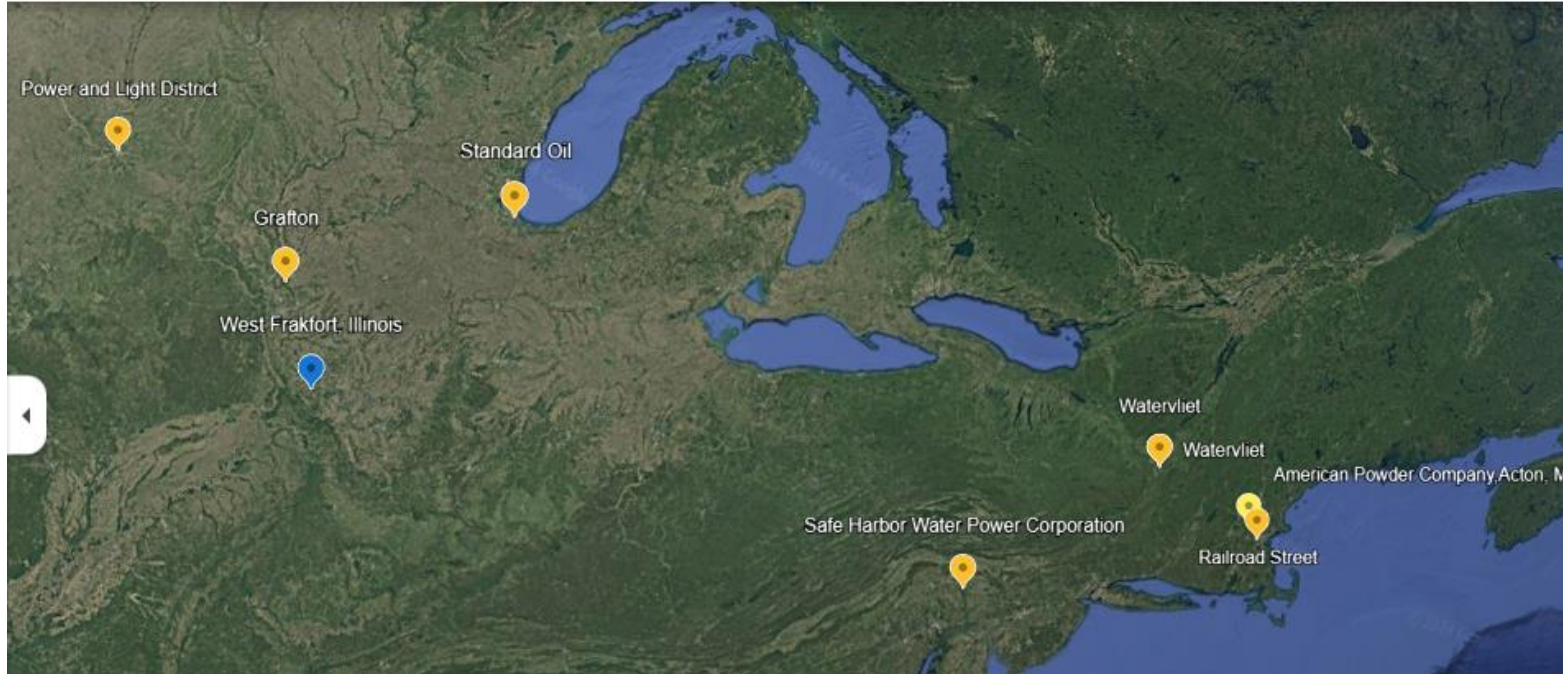
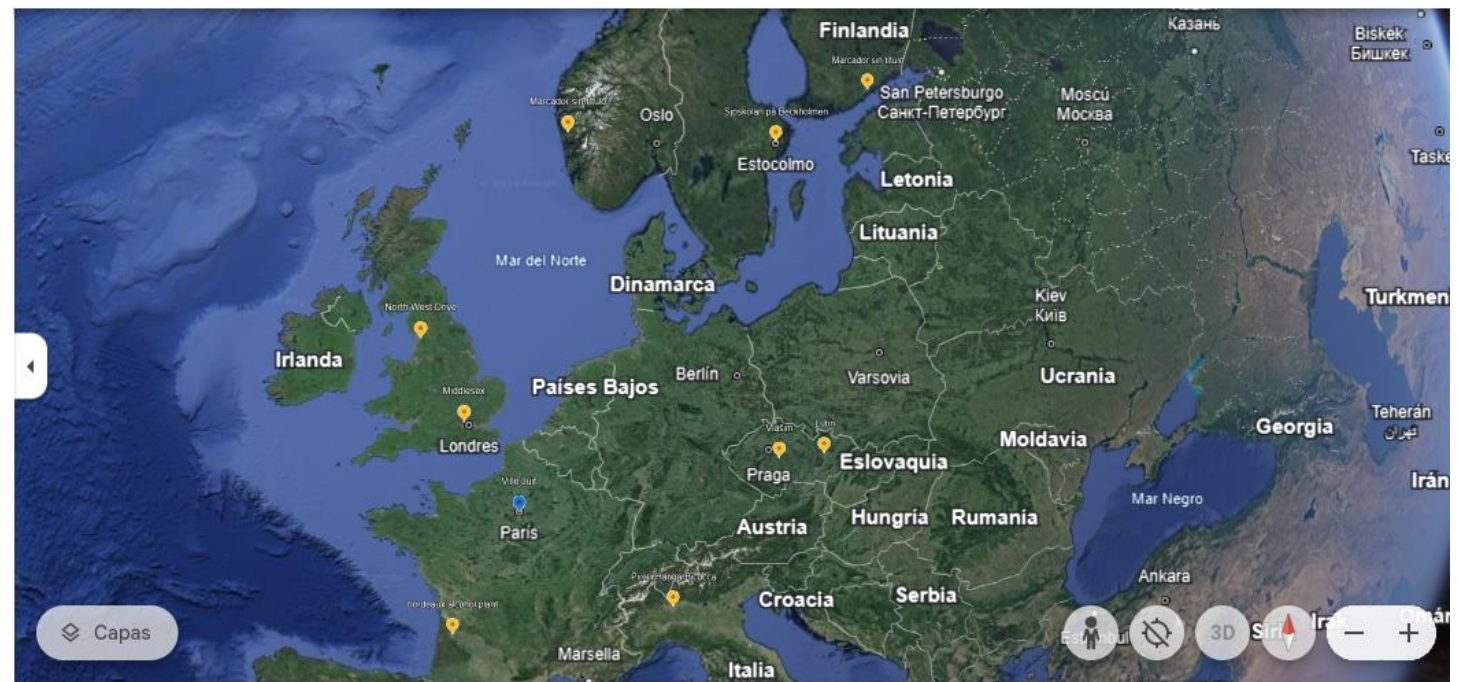


Table 1. Lists of unexplained explosions and rare phenomena including dates, locations and more details.

| # | Y | M | D | Ap | Kp max | Country | Location | Lat. | Long. | Alt.(m) | Explosion in the interior of the giant flying boat | Claimed Cause | dead/injured |
|----|------|----|-----|--------------|------------|------------|-----------------------|----------|-----------|---------|---|---------------|--------------|
| 1 | 1938 | 1 | 13 | 29 | 6- | Am. Samoa | Pago Pago | 14°15'S | 170°43'W | 6 | Explosion in a munitions depot | Unknown | 0/7 |
| 2 | 1938 | 1 | 23 | - | - | Spain | Algeciras | 36°06'N | 5°26'W | 20 | Violent explosion in a factory of explosives | Sabotaje ? | No data |
| 3 | 1938 | 1 | 26 | 62 | 8+ | Java | Rembang | 6°42'S | 111°20'E | 8 | Munitions blasts | Unknown | 9/38 |
| 4 | 1938 | 1 | 26 | 62 | 8+ | France | Villejuif | 48°47'N | 2°21' E | 62 | Two explosions at a dynamite factory | Unknown | 14/7 |
| 5 | 1938 | 1 | 27 | - | - | Scotland | Ardeer Ayrshire | 55°37'N | 4°44'W | 9 | Explosion of a carbide storage facility | Poor info | 6/12 |
| 6 | 1938 | 1 | 27 | - | - | France | St. Rambert de Alblon | 45°17'N | 4°49'E | 123 | Three explosions in a munitions factory | Unknown | No data |
| 7 | 1938 | 1 | 28 | - | - | Italy | Segni | 41°24'N | 13°01'E | 618 | Explosion destroyed an army arsenal | Not found | 35/350 |
| 8 | 1939 | 3 | 1 | - | - | Japan | Osaka | 34°41'N | 135°31'E | 15 | Explosion destroyed a factory of explosives | Unknown | 200/400 |
| 9 | 1939 | 3 | 27 | - | - | England | Caversham | 51°27'N | 1°01'W | 49 | Explosion of French cruiser and mine layer | Unknown | 3/several |
| 10 | 1939 | 9 | 16 | - | - | France | Paris | 48°51'N | 2°17'E | 35 | Munitions factory explosion | Unknown | 100 |
| 11 | 1939 | 9 | 29 | - | - | England | North Coast | 54°30'N | 1°30'W | 0 | Explosion of a British Destroyer and British freighter | Poor info | 15/4 |
| 12 | 1939 | 11 | 14 | - | - | England | No data | 57°29'N | 7°50'W | 0 | Explosion at a U.S. Army Arsenal | Poor info | 7/15 |
| 13 | 1940 | 3 | 22 | -32 30 | 9 (6) | US | Picatinny, NJ | 40°55'N | 74°34'W | 217 | Explosion on the destroyer King | Unknown | 0/19 |
| 14 | 1940 | 3 | 27 | 30 (31) (30) | 5+ (6) (5) | US | Newport Road Island | 41°26'N | 71°19' W | 0 | Explosion and sinking of the French destroyer Rallouze | Gas leak ? | 1 |
| 15 | 1940 | 3 | 27 | 30 (31) | 5+ (6) | Morocco | Casablanca | 35°38'N | 7°40'W | 0 | Explosion at a munitions depot | Unknown | 100 |
| 16 | 1940 | 4 | 20 | 14 (19) | 3 (3) | England | North London | 51°36'N | 0°03'W | 11 | Explosion at King Powder Co. | Damage ? | 5/15 |
| 17 | 1940 | 8 | 7 | -21 (18) | 4 (4) | US | King Mills, Ohio | 39°21'N | 84°14'W | 204 | Explosion at King Powder Co. | Unknown | 3 |
| 18 | 1940 | 9 | 13 | 7 (13) | 2 (3) | US | Kenvill, NJ | 40°53'N | 74°37'W | 150 | Two explosions in the factory Hercules Powder Co. | Unknown | 50/11 |
| 19 | 1940 | 9 | 23 | 3 (6) | 1 (1) | US | Picatinny, NJ | 40°55'N | 74°34'W | 173 | Explosion at a U.S. Army Arsenal | Unknown | 2/11 |
| 20 | 1940 | 11 | 9 | 19 (17) | 3 (3) | Australia | Victoria | 38°51'S | 143°31'E | 0 | First U.S. ship sunk in the war | Mine ? | 0 |
| 21 | 1940 | 11 | 12 | 19 (24) | 3 (5) | US | Atlanta, GA | 33°45'N | 84°23'W | 340 | Fire at an armory and municipal auditorium | Unknown | 0 |
| 22 | 1940 | 11 | 12 | 22 (24) (24) | 5+ (7) (5) | US | Woodbridge, NJ | 40°32'N | 74°15' W | 10 | Explosion at United Railway Signal Co. | Unknown | 10 |
| 23 | 1940 | 11 | 12 | 22 (24) (24) | 5+ (7) (5) | US | Allentown, PE | 40°38'N | 75°31'W | 103 | Explosion at Trojan Powder Co. | Unknown | 3/several |
| 24 | 1940 | 11 | 12 | 22 (24) (24) | 5+ (7) (5) | US | Edinburg, PE | 41°00'N | 80°25'W | 400 | Explosion of 1000lb dynamite in Burton Power Works | Unknown | 3 |
| 25 | 1940 | 11 | 12 | 22 (24) (24) | 5+ (7) (5) | US | New Castle, PE | 40°59'N | 80°20'W | 300 | Explosion in American Cyanamid & Chemical Co. | Unknown | 3 |
| 26 | 1940 | 11 | 12 | 22 (24) (24) | 5+ (7) (5) | US | Canton, Ohio | 40°45'N | 81°22'W | 311 | Explosion at Alleghany Oil Co. | Unknown | No data |
| 27 | 1940 | 11 | 17 | 20 (18) | 5 (5) | US | Oklahoma | 35°23'N | 97°36'W | 365 | Explosion damages an oil well | Unknown | No data |
| 28 | 1940 | 11 | 17 | 20 (18) | 5 (5) | US | Johnstown, PE | 40°17'N | 78°54'W | 387 | Fire in factory of incendiary bombs Penn. Chem. Co. | Unknown | No data |
| 29 | 1940 | 11 | 17 | 20 (18) | 5 (5) | US | Bridgeville, PE | 40°21'N | 80°06'W | 250 | Explosion at Selded Works Am. Cyanamid and Chem. Co. | Unknown | 2/23 |
| 30 | 1941 | 2 | 22 | 41 | 6- | US | West Frankfort, IL | 37°52'N | 88°55'W | 128 | Underground explosion in a coal mine | Unknown | 3 |
| 31 | 1941 | 2 | 27 | 6 | 2 | US | Acton, MA | 42°26'N | 71°26'W | 89 | Explosion of black powder in American Power Co. | Unknown | 1/1 |
| 32 | 1941 | 6 | End | 30 | 4 | Czech Rep. | No data | 49°44'N | 13°22'E | 210 | Mysterious accident. An ammunition train was blown | Unknown | No data |
| 33 | 1941 | 9 | 13 | 24 | 6- | Finland | Skatudden | 60°09'N | 24°58'E | 0 | Explosion of a munitions ship in Skatudden harbor | Unknown | Many injured |
| 34 | 1941 | 9 | 14 | 26 | 4 | Brazil | Toque Toque Grande | 23°49'S | 45°30'W | 5 | Explosive quarry blast | Unknown | 0 |
| 35 | 1941 | 9 | 14 | 26 | 4 | Italy | Milan | 45°31'N | 9°13'E | 122 | Fire at a cellulosa factory | Unknown | 1 |
| 36 | 1941 | 9 | 16 | 20 | 6- | Brazil | Santos | 23°57'S | 46°18'W | 2 | Fire at a warehouse | Unknown | 0 |
| 37 | 1941 | 9 | 17 | 18 | 3 | Sweden | Stockholm | 59°19'N | 18°16'E | 28 | Harsfjarden Naval Yard. Explosion of three destroyers | Unknown | 31/11 |
| 38 | 1941 | 9 | 17 | 18 | 3 | US | Benzon, AZ | 31°58' N | 110°17' W | 1165 | Explosion at Apache Powder Co. | Unknown | 2 |
| 39 | 1941 | 9 | 17 | 18 | 3 | US | Kansas | 39°05'N | 94°34'W | 270 | Kansas City Blackout with 400,000 people affected | Unknown | 0 |
| 40 | 1941 | 9 | 18 | 232 (55) | 9- | US | Grafton, IL | 38°58'N | 90°26'W | 135 | Explosion at Illinois Powder Manufacturing Co. | Unknown | 1 |
| 41 | 1941 | 9 | 18 | 232 (55) | 9- | Ecuador | Malambra, Ancón | 2°19'S | 80°59'W | 0 | Carcasses of 23 whales appear on the coast | Unknown | No data |
| 42 | 1941 | 9 | 18 | 232 (55) | 9- | Japan | Sea of Japan | 34°30'N | 130°28'E | 0 | Sinking of a 60-ton Japanese fishing boat | Mine ? | No data |
| 43 | 1941 | 9 | 18 | 232 (55) | 9- | US | Boston | 42°17'N | 71°07'W | 14 | Fire at 4 Maine railroad freight sheds | Unknown | 0/4 |
| 44 | 1941 | 9 | 22 | 8 | 2 | England | North West England | 54°22'N | 3°27'W | 110 | Explosion at Royal Ordnance Co. Munitions factory | Unknown | 1/3 |
| 45 | 1941 | 9 | 22 | 8 | 2 | England | Middlesex | 51°32'N | 0°21'W | 30 | Explosion of a factory | Unknown | 0 |
| 46 | 1941 | 9 | 24 | 27 | 6- | US | New York | 42°43'N | 73°42'W | 16 | Explosion at the Watervliet Arsenal dynamite depot | Unknown | 3 |
| 47 | 1941 | 9 | 24 | 27 | 6- | Czech Rep. | Pilsen | 49°43'N | 13°20'E | 320 | Explosion at a Nazi munitions factory | Unknown | 250 |
| 48 | 1941 | 9 | 24 | 27 | 6- | Czech Rep. | Lutin, Movravia | 49°41'N | 17°08'E | 220 | Explosion at a chemical plant | Unknown | >100/900 |
| 49 | 1941 | 9 | 24 | - | - | Norway | Kristiansholm Island | 60°24'N | 5°19'E | 14 | Blaze on one-third of the island | Unknown | No data |
| 50 | 1941 | 9 | 24 | 27 | 6- | France | Burdeos | 44°49'N | 0°33'W | 12 | Explosion at an explosives and synthetic gasoline factory | Unknown | No data |

PORQUÉ SE PRODUJERON LAS EXPLOSIONES?

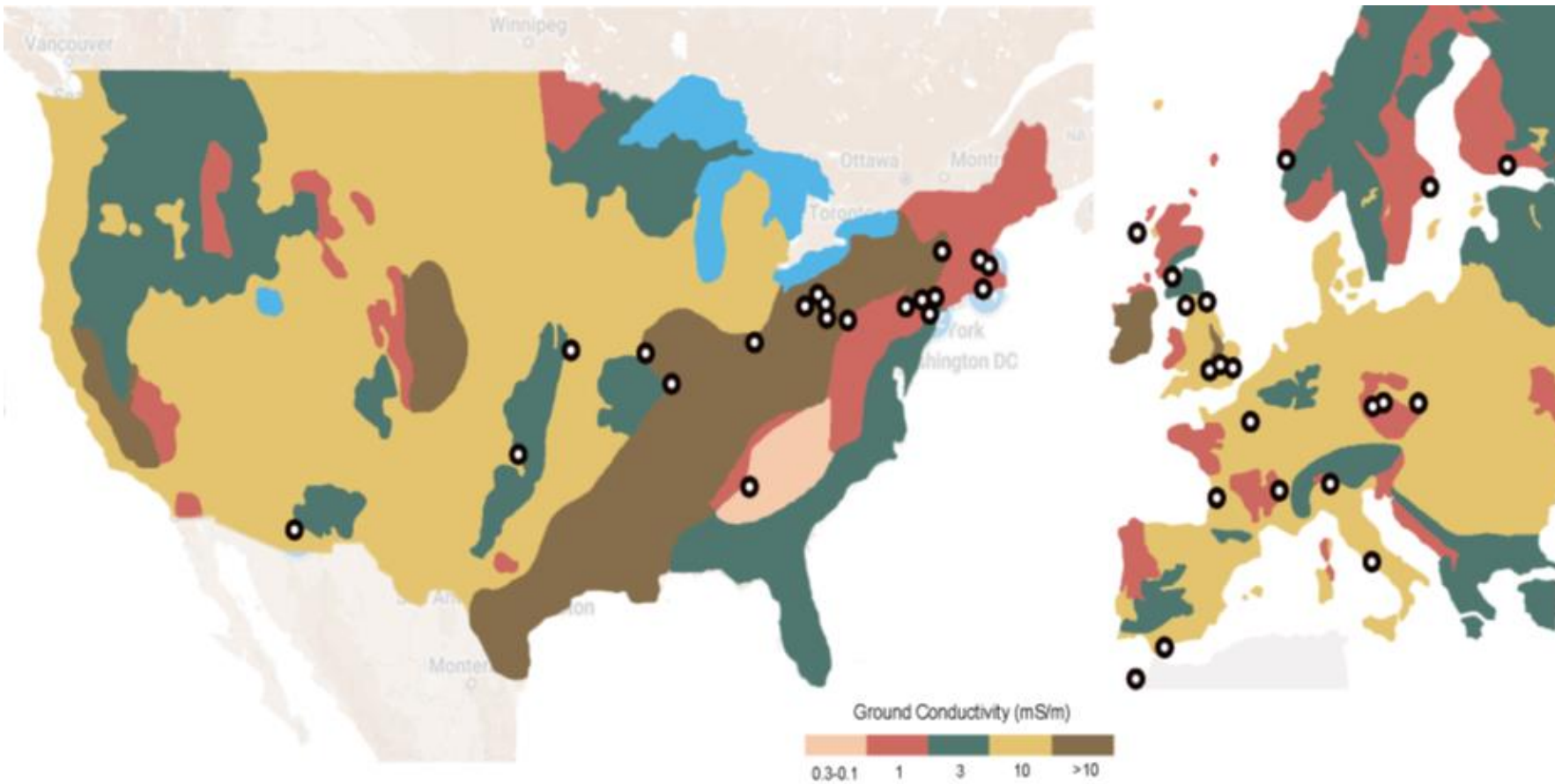
HIPÓTESIS

- Un cambio brusco en el campo magnético de la tierra producido por las tormentas solares genera GIC en líneas de energía, rieles, cables submarinos.
- Efecto multiplicador en las GIC de la conductividad del terreno donde ocurren. Por ejemplo en suelos con alta conductividad; Las corrientes se distribuyen más uniformemente y se propagan con mayor facilidad
- En suelos de mayor resistencia eléctrica las GIC encuentran más dificultad para moverse a través del suelo. Las corrientes pueden concentrarse en puntos específicos donde hay mayor conductividad, como líneas metálicas o tuberías.

PORQUÉ SE PRODUJERON LAS EXPLOSIONES?

HIPÓTESIS

- Zonas de transición conductiva: En áreas donde hay una transición de suelos conductivos a resistivos (por ejemplo, de una costa a un terreno rocoso), las GIC suelen concentrarse. Esto ocurre porque el cambio abrupto en la conductividad genera una acumulación de los campos eléctricos inducidos, intensificando las corrientes en esas regiones.



Mapas de conductividades terrestres efectivas para EE. UU. y Europa). Los puntos corresponden a las ubicaciones de incidentes inexplicables notificados,

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GRACIAS