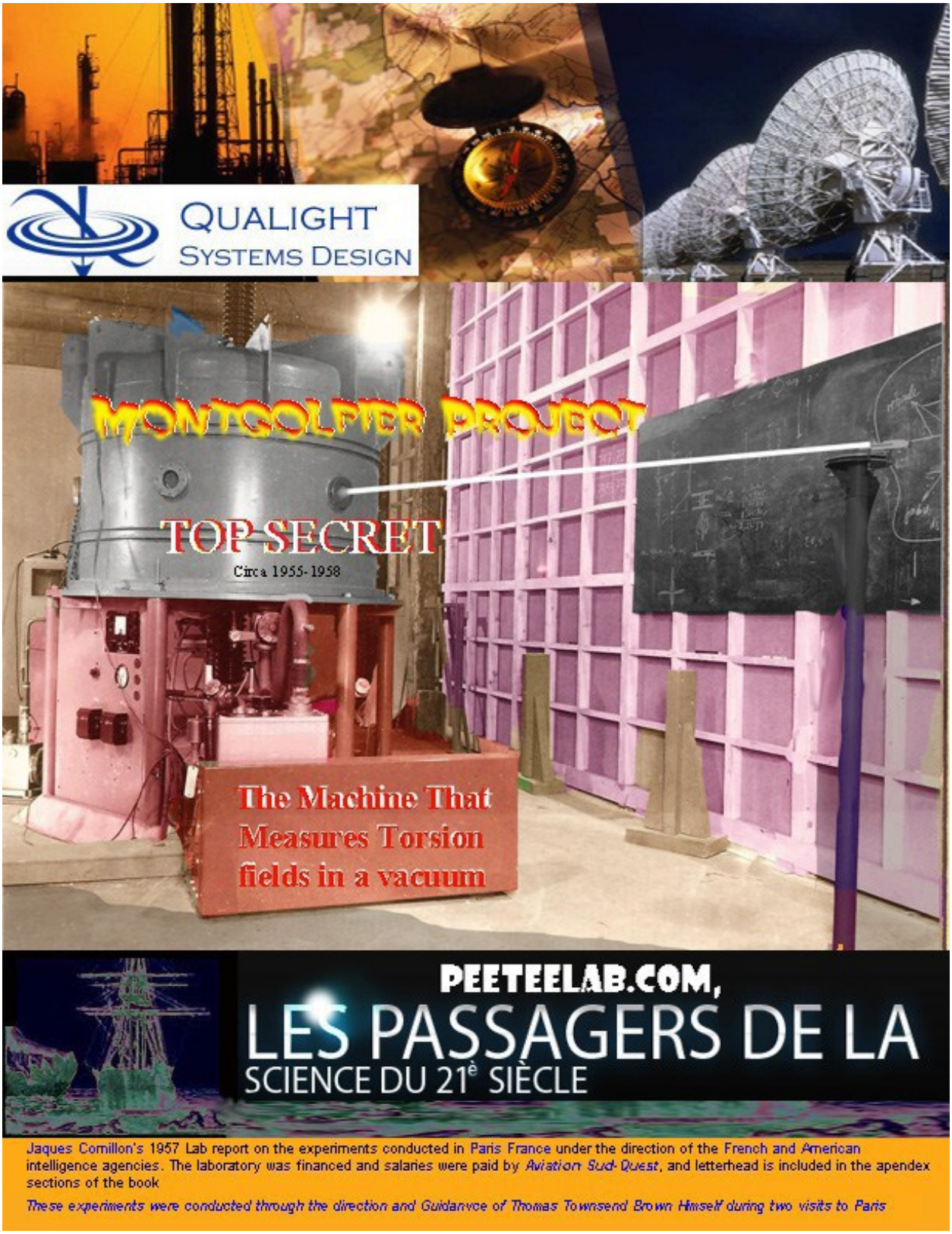
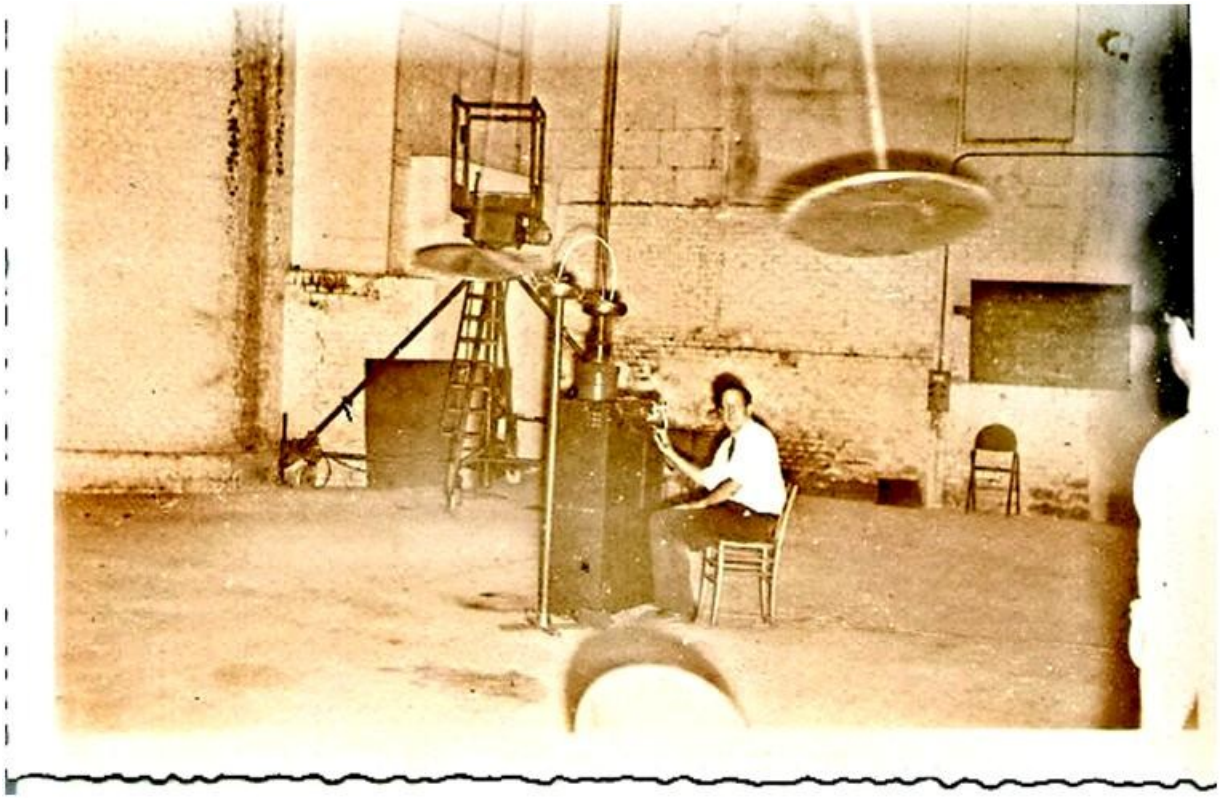


Jaques Comillon's 1957 Lab report on the experiments conducted in Paris France under the direction of the French and American intelligence agencies. The laboratory was financed and salaries were paid by *Aviation Sud-Quest*, and letterhead is included in the apendex sections of the book

These experiments were conducted through the direction and Guidanvce of Thomas Townsend Brown Himself during two visits to Paris

MONTGOLFIER Project



SUMMARY REPORT OF THE EXPERIMENTS

A translation from the original documentation supplied by Jacques Cornillon

Paris, the 1st of July 1957
Serial number 2

This report describes a study known within the ranks of SUD AVIATION as the "Project Montgolfier."

Five separate time periods are described in the chronological order of the project.

1 - The first time period is related to a documentary study. Our interests were peaked by the appearance of a few foreign news articles which revealed the possibility of a new type of propulsion system. We contacted our U.S. technical representative Mr. J. Cornillon to inquire about this. The few fragmented documents we had found pointed to the existence of "Project Winterhaven," which appeared to have the same importance as the "Manhattan Project" had in the United States. The purpose of Project Winterhaven was to develop a flying vehicle using a new propulsion motor which was sometimes called Electrokinetic, and at other times called an Electrogravitic system. Mr. Cornillon started his document search from his location within the United States and subsequently communicated directly with Mr. T.T. Brown who seemed to be the original developer and whom was researching a new phenomena named the "Biefeld-Brown effect." This phenomenon appeared to be at the very heart of "Project Winterhaven."

The Phenomena is described as such: *forces emanating from an electrically charged condenser are not "null" but the condenser itself has a tendency to move forwards on the positive end.* After Mr. Cornillon's first contact with Mr. Brown, it was determined that Mr. Brown was capable of performing an experiment which would demonstrate the reality of this phenomena, which prompted us to offer Mr. Brown an invitation to fly back to France to perform this experiment. Meanwhile, we received a document describing the Biefeld-Brown effect, and we are attempting to duplicate the authenticity of the effect using information contained within this document. The Experimental hardware is described in the Annexed sections 1.1 and 1.2 (at the conclusion of this primary report).

The rudimentary experiments conducted in annexed section 1.1 and 1.2 did not yield any conclusive results so we have decided to invite Mr. Brown to come to France.

2 - The second time period covers Mr. Brown`s activities in Paris (June 1955). At this juncture, he proposed two distinctive experiments:

2.1 - Displacement of a charged condenser suspended in an oil filled container (see Annexed sections 2.1).

2.2 - Displacement of an "engine" suspended from a horizontally mounted wheel ("Carrousel," see Annexed section 2.2).

This "engine" is composed of a disc (suspended in a fashion as to make its axis vertical) which has a thin wire installed in parallel to the edge of the disc and stretching across an arc angle of approximately 120 degrees spanned from the center of the disc.

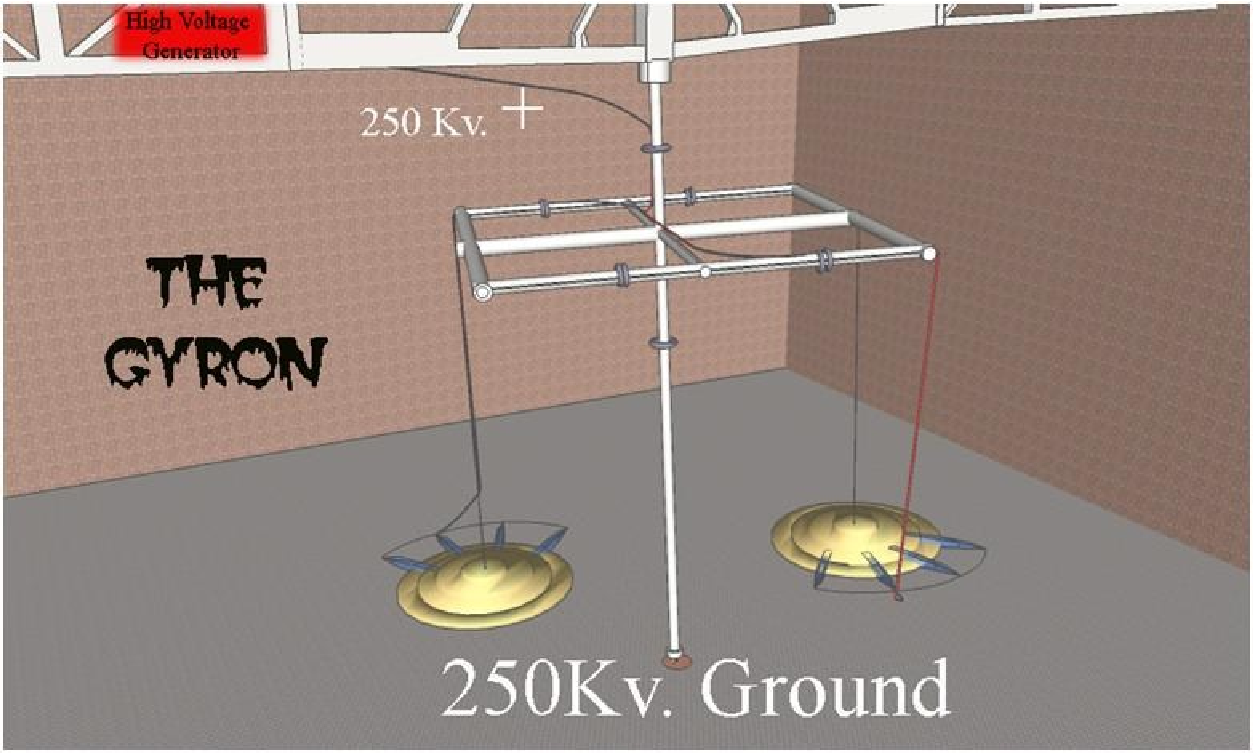
The wire is mounted using Plexiglas standoffs. In the experiments conducted during this period, the disc was charged with a negative high voltage and the wire was connected to ground.

These experiments were judged to be "inconclusive" because they were conducted in an environment containing "air," and there was only one electrical polarity used. It was then decided that the only way to verify Mr. Brown`s assertions was to conduct the experiments in a vacuum and using dual electric polarities.

3 - The third period of time begins on July 1955, which was the ending date of Mr. Brown`s first visit, until the end of March 1956, which was at the end of his second visit amongst us. During this time period three separate experimental set-ups were used:

3.1 - A Merry-go-round (Gyron) much larger than the earlier (carousel) was proposed for use with higher voltages of both polarities (+250kV and -250kV).

See Annexed section 3.1 -



We eventually had to give-up trying to perform these last experiments due to the following factors:

• We were unable to generate the voltages and currents required,

• The experimental results obtained during the carousel try-outs revealed that the effect was generated electrostatically, and the expected force results were (when detected) were clearly weaker than expected. We determined that the direction of the motion produced by the engine we tested to begin with, were not reversible in consequence to a reversal of the electrical polarity, which is an issue which Mr. Brown had led us to believe.

The experimentation did however lead us to conclude that we were dealing with an algebraic summation of forces E(unit vector) which was related to the geometry of the armatures and originating from electrostatic forces. The other summation of force (unit vector) was polarized and represented the desired effect which we were looking for in the first place.

3.2 - In the hopes of discovering any evidence of a different kind of summation of forces, we created a suspended apparatus (Escarpolette)(swing) which was much more sensitive than the "Gyron." This apparatus could permit us to resolve the two:

- *Equation* $\vec{E} + \mathbf{U} =$....(what) and $\vec{E} - \vec{\mathbf{P}} =$ ...(what)

- We accomplished this by using an a-priory method (to begin with), by seeking a null (0) factor.

The $\vec{E}$ forces were determined to be too important and yet irregular due to the humidity of the air and resulting ionization. Because of this we were unable to reach our goal. See (Annexed section 3.2).

The only issue we resolved was the need to either perform all the tests under vacuum or to use symmetrical polarity armatures for conducting the electric charges.

3.3 - Proposed creation of a smaller apparatus which can operate in a vacuum.

3.3.1 - The only readily available vacuum pumping equipment and containment which was available to us was a "bell jar" capable of reaching 5.1^{-5} mm Hg. with a 290mm diameter and 360mm height, which was crowned or topped with a high voltage feed-thru component. The upper high voltage feed-thru component would furnish one of the armatures and the lower armature would be grounded. The experiment tools used inside the vacuum included a Carousel (merry-go-round type) conceived in such a fashion as to allow us to measure qualitative values in a continuous rotation mode and quantitative values in the Torsion mode. (see: Annexed section 3.3.1).

3.3.2- Our experiments in "continuous rotation mode" were separated into four different set-ups:

- Positive High Voltage to the disc. Wire to ground,
- Negative High Voltage to the disc, Wire to ground,
- Disc Grounded Positive High Voltage on the wire, and
- Disc Grounded Negative High Voltage on the wire.

The result of performing tests in the above four set-ups permitted us to verify the predominance of the effect within a polarized atmospheric pressure normalized to "one atmosphere of normal air."

The above set-ups were again tested, this time the bell jar was put in place whereas everything else remained equal. The Qualitative values remained as previously stated above. It was noted the speed of the rotary action remained slower than the above mentioned first try-out even thought all other parameters remained identical. (See Annexed sections 3.3.2).

The experiments which have been performed up to the present have served to discover if the usage of a Bell Jar could or could not affect the outcome of a rotary action.

In an effort to verify past experiments we preceded with the fabrication of a precision electrostatic torsion and that this torsion turns well at atmospheric pressure with or without the bell jar being in place. Unfortunately we discovered that when the bell jar is evacuated the residual propulsive forces were overcome by friction and the apparatus remained still while in vacuum. (See Annexed sections 3.3.3).

3.3.4 - We have repeated the four experiments cited in 3.3.2 but this time we did so in a vacuum (of approximately 5.10^{-5} mm Hg).

3.3.4.1 - This time we succeeded in observing a polarity in the sense of rotation which is always forwards on the positive end and it is as thus in all four of the above experimental set-ups, however it was also noticed that both the regularity and the speed of rotation varied more or less.

These Quantitative irregularities are caused by:

- The proximity of the Glass bell Jar to the Armatures used to conduct the electric charges.
- The nature of the bell jar through which a high voltage feed-though is mounted upon is such that the existing apparatus provides an unstable environment to distribute a steady state high voltage charge to the armatures. The high voltage charge distributes itself uncontrollably and this ends up slowing down and stopping the rotation observed.

We have also observed occasionally the presence of FLASHES within the bell jar to which we attributed as being cause by one of two possible actions: a sudden ionization of left-over particles which were stuck to glass walls of the bell jar before evacuation. Or else, it was necessary to create such a high voltage force gradient to permit motion of the physical components.
If this were the case, it would undoubtedly be impossible for us to begin quantitative value analysis in "torsion mode" because we would end-up trying to measure forces between the armatures and/or various parasite charged areas randomly distributed inside the bell jar.

We also determined that several of the actions we undertook outside of the bell jar surrounding the rotating apparatus would result in stopping the motion. For instance, if we made the outside bell jar surface conductive, by making it wet, or surrounding it with a grounded metallic shield, the motion would be stopped. This appears normal for us because we are observing a self-evident fact about fixed charges.

Inversely, it was determined that the diminished "Humidity" of ambient air would result in an increase in the regularity and speed of rotation (according to an experiment conducted in February 1956 where the ambient temperature was much lower than 0 degrees Centigrade) (melting point of ice). (See annexed sections 3.3.4.1).

3.3.4.2 - By reducing the vacuum in the bell jar to the absolute minimum possible within the limits of available vacuum pumping equipment we were able to verify that the resulting forces acting upon the system inside the bell jar was in fact a sum of two forces.

The first is non-polarized and is largely predominant in normal atmospheric pressure $\vec{E}$, and the other force $\vec{P}$ remained practically intact under minimum pressure.

Again, in both cases (Positive on the wire, and negative polarity on the disc) Whereas, when the effects of $\vec{E}$ is working in the same direction as $\vec{P}$, the system displaces itself positive forwards regardless of the system operating in either atmospheric pressure or "in vacuo."

Inversely, in the other two experiments (negative polarity on the wire, and positive polarity on the disc) it was determined that $\vec{E}$ effects worked against $\vec{P}$ effects, however the system displaced itself "Negative-forwards" at atmospheric pressure whereas it displaced itself "Positive-forwards" under vacuo (see annexed sections 3.3.4.2).

3.4 - Experiments featuring a Flat condenser using air dielectric and also under vacuum.

Using the equipment described briefly in section3.3.1-, we tried using a flat faced condenser vertically mounted in a parallel configuration

This set-up used two flat circular armatures, -one of which was connected to a high voltage source whilst the other was grounded. In this case either "Air" or a "Vacuum" was the defined dielectric.

We experienced the same results as the previous experiment which is to say: under ordinary atmospheric pressure, the motion of the experimental device is evident regardless of polarity. This seems explicable by the notion that the amateur with the high voltage feed located on the rounded interior sector of the disc apparatus acts very much like the "torsion point" which play a vital role in promoting this motion. (See; annexed section3.4).

Inversely when the Bell Jar is reduced to a vacuum, the condenser displaces itself positive-forwards even when the polarities are inversed (see Annex 3.4).

Under vacuum conditions, the same observations are seem in section 3.3.4.1.

3.5 - Experiments on a Plexiglas dielectric condenser in Vacuo and at atmospheric pressure.

These experiments are similar in nature as the experiment in 3.4-, and we have determined that at atmospheric pressure the apparatus experiences rotation when the armatures are grounded regardless of the polarity.

This seems reasonably explainable by the torsion effect which is again demonstrated because the armature is being fed with high voltage on the rounded inside surface (see annexed section 3.5).

Inversely when the bell jar is evacuated the condenser displaces itself positive forwards regardless of the inversed polarity. (See annexed section 3.5).

3.6 - Upon Mr. Brown's arrival, and during his second stay with us, we promptly presented him with the results of these latest experiences, which as he stated to us, he had never undertaken to perform himself.

Mr. Brown proceeded to direct our experimentation in another direction by increasing the field in between armatures using "points." He also suggested using armatures of a different metallic composition.

The inherent conductivity problems provoked by the bell jar itself were far superior to the proposed remedies that Mr. Brown had suggested and despite hundreds of different modification suggested by Mr. Brown we were unable to obtain any better results (see annexed section 3.6).

4 - The fourth section of the second trip to Paris by Mr. Brown Began at the end of March 1956 and lasted until December 1956.

Evidently our first experimental approach using an evacuated bell jar was loaded with so many sufficient deficiencies that we were forced into an impasse. We were convinced that what was needed was a new

direction in our research. We would concentrate on developing fully geometrically symmetric armatures capable of handling both polarities.

4.1 - We also decided to try and prove one of Mr. Cornillon's Hypotheses regarding the rotation effects under vacuum. Mr. Cornillon suggested that this rotation should be regarded as "an anodic type rotation" which was actually being caused by the effect of a portion of the particles which are being ripped away from the anode and are trying to direct themselves towards what would normally be the cathode. The rotating apparatus discharging particles fails to detect "a Cathode" and thereby assumes that the complete summation of surfaces surrounding the inside of the Bell Jar apparatus is effectively considers as its own missing cathode.

We are reminded that our secondary goal is:

- To answer the hypotheses provided by Mr. Cornillon, and

- To diminish the "torsion Effect."

We have tried the disc apparatus connected to a wire however this time we stationed a piece of Plexiglas between the dual armatures. A half portion of the disc was effectively covered along with the complete wire assembly (see Annexed section 4.1).

Four different configurations were envisioned (the same as previously mentioned herein). Using the four configurations we proceeded to verify rotation of the apparatus under vacuum conditions. Although we tried our best, the efforts lacked precision and were designed to determine qualitative values only. The humidity inherent to the inside of the bell jar continued to cause problems. We thus tried these same experiments at normal air pressure whereby we developed the following results:

- When the high voltage on the wire was positive and the disc was grounded, the assembly displaces itself sometimes wire-in-front, (in the sense that the motion was negative to positive). However in the majority of cases it was the disc which moved forwards, -which is to say "Positive-to-negative."

- When the high voltage on the wire was negative and the disc was grounded, the assembly displaces itself disc-forwards –which is to say "Negative-to-Positive."

- When the high voltage negative was placed on the disc and the wire was grounded, the assembly displaced itself "wire-forwards," which is to say "Negative-to-Positive."

- When the high voltage positive was placed on the disc, and the wire was grounded, the assembly displaced itself "disc-forwards," which is to say "Negative-to-Positive."

Of the four preceding experiments the first three seemed perfectly well anticipated Inasmuch as the first experiment demonstrated a disc-forwards type displacement.

Effectively, - it is the armature holding the high voltage which produces the larger field and thereby produces a Torsion effect whereby the apparatus displaces itself from high-voltage armature to ground armature.

The fourth observation is a flagrant violation of this rudimentary explanation, and appeared by some unknown means to prove the reverse hypothesis of a summation in forces.

Then there was the issue caused by the ambiguous rotation of our first configuration, which took one direction then the other for seemingly unknown reasons. We believe the cause was related to the curve angle of the wire compared to the curve angle of the edge of the disc. In effect, $\vec{E}$ was much larger in the first configuration than in $\vec{E}$ in the fourth configuration, and depending upon the ambient temperature and humidity, would produce a inhomogeneous counter-effect to the $\vec{P}$ forces. (see annexed section 4.1).

4.2 - In an effort to amplify the $\vec{P}$ force to expand the field without creating a large vertical surface charge density (the $\vec{E}$ effect), We created the following apparatus: a system using two discs separated by a Plexiglas insulator. The grounded side of the disc also had a vertical point extending away from it. We were able to determine that in the majority of cases when the high voltage is negative, the system tended to displace itself from negative to positive, (in other words point-forwards) the speed of the rotation being proportional to the level of the voltage applied.

Using a positive source high voltage raised to a predetermined level, the system would displace itself from positive to negative (in other words Point-forwards) whereas when the voltage is raised slightly above the preceding voltage level, the system would immobilize itself, and when the voltage level is increased even more, the system reverses it`s direction and begins to displace itself negative to positive (point-backwards).

Everything behaves as if there was a summation of two forces $\vec{E}$ and $\vec{P}$, and in the first case with the high voltage being negative we would witness $\vec{E} + \vec{P}$ and in the second case with a positive high voltage we are experiencing $\vec{E} - \vec{P}$.

Consequently the graphic curves we traced of the rotation speed verses the applied voltage are not always identical in nature.

At the beginning, the graphic curves **N=f(U)** traced in positive,-then negative are within the same general area of the graph, however there is then a divergence in the curves whereby the negative curve begins to expand (sometimes demonstrating a slight inflection point in the curve itself). Meanwhile the positive curve begins contracting until N=0, then reverses abruptly curving in the opposite sense. These graphic curves remind us of a dual function polynomial curve of the third order of U (see annexed section 4.2).

When we trace our graphic curves for sum and differences of the type **N=f(U)** for two separate procedures one whereby the high voltage is positive and in the next procedures where the high voltage is negative we are witnessing a half-summation of forces which we have identified as $\vec{E}$.

At first this curve is expanding and then contracting in an area where there may begin an important ionization phenomena.

Whereupon we have identified a force described as the $\vec{P}$, which was traced as a "half sum curve" with its axis component being tangent to rapidly increasing electric fields. (See annexed section 4.2).

4.3 - We repeated the vacuum experiments described above, however this time we made the following changes to the apparatus inside the bell jar: we removed the point and mounted two discs on the same horizontal plane separated by a 1 cm gap and completely enclosed the discs in a Plexiglas casing one of the discs was fed with high voltage whereas the second disc was grounded.

Despite the numerous problems caused by the proximity of the inner wall of the bell jar, the system armatures displaced themselves positive forwards. This is to say that when positive high voltage was applied, the armatures moved positive forwards, and when the armature was grounded, and a negative high voltage was applied, the grounded armature displaced itself exactly as if the above reversed condition was being used. (See annexed section 4.3).

4.4 - We proceeded to verify that the above described experiments were valid even after we had developed a separate high voltage conductive passage from the exterior of the evacuated bell jar. The experimental results obtained in 3.3.4.1, 3.3.4.2, and 4.3 remained valid despite the fact that neither of the armatures had been grounded, in other words the use of a grounded armature had no effects on the results of the experiments, and a symmetrically fed high voltage of both polarities used on the armatures were just as effective as the use of a ground plane.

4.5 - Our vacuum bell jar experiments did effectively confirm the existence of a "polarized force" , and we managed to produce a smaller version of the previously described GYRON apparatus . In an effort to confirm the positive (unit vector) force (3.1), we were careful to use geometrically symmetric apparatus which displayed minimally weak curves. To achieve these conditions we have used (in the bigger picture of things) the same experimental apparatus as the type used in 4.3. The experiments served to prove effectively that a reversal in voltage polarity resulted in a reversal of the displacement. We have also determined that using lower valued voltages which produced displacement was possible if the ambient humidity was relatively low. Our conclusion was that the rotation or displacement observed was essentially caused by a difference in the voltages used rather than all of the remaining absolute values.

The propulsive energy of the apparatus seams to depend upon the accumulation of electric charges upon a dielectric surface assembly which is insulated by either Plexiglas or Bakelite. When we connected a parallelepiped configuration of Barium Titanate upon the armatures we observed a significant increase in the propulsive force.

During the fifth experimental time sequence from December 1956 to the final printing and distribution of the report several experiments were conducted at the suggestion of Mr. Besson (director of the institute of superior studies) and also, - Mr. Jouguet, professor at the E.S.E. institute and master of the conferences held at the Polytechnic institute. We proceeded to conduct the experiment as per their suggested procedures.

In an effort to eliminate any false data produced by unwanted ionization and to simplify our experimental procedures, Mr. Besson, and Mr. Jouguet suggested we built the following apparatus:

- A flat condenser composed of two parallel mounted discs with rounded edges (the ultimate goal being diminished field intensity between armatures). The voltage feeds to the discs should be co-linear, and the condenser itself should be enclosed inside a polystyrene or araldite sphere which is void of air bubbles.

- As with all other vacuum experiments we had conducted up that point it was determined that the apparatus demonstrated without doubt the existence of a polarized displacement force acting from negative to positive.

As with other previously conducted tries, -we witnessed the braking action caused by the inner walls of the bell jar.

- With the additional use of an Aradite sphere we were able to clock speeds of 3 turns per second (see annexed section 5).

The Summary report ends here.

Annexed sections 1.1- and 1.2

The Experiments conducted during the first time period were only conducted in an effort to verify the information contained in a document sent to us by Mr. Cornillon.

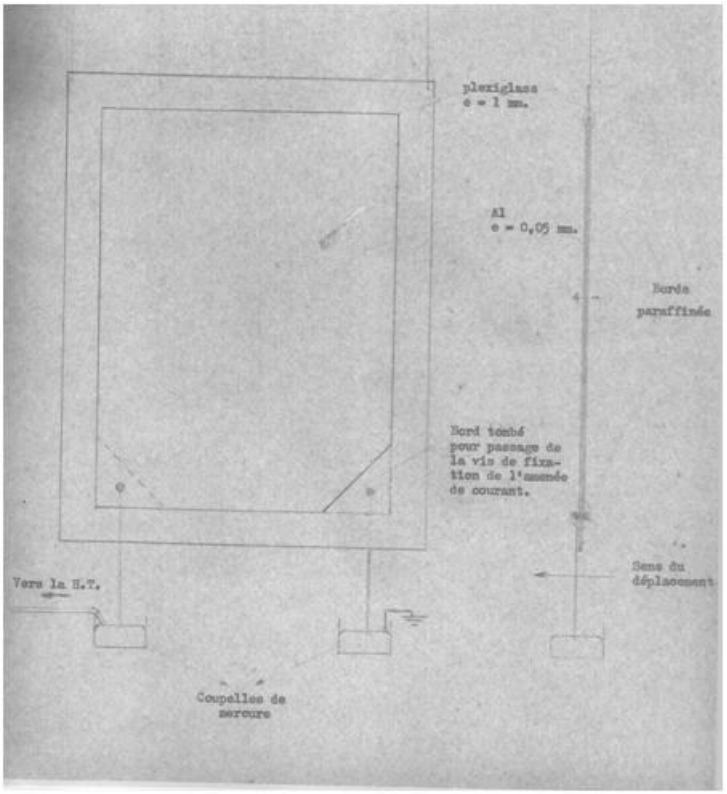
In this document it was claimed that a suspended condenser charged with high voltage was the source of a force perpendicular to the plates of the condenser and moving from a negative to positive direction. (The Biefeld-Brown force).

Before making direct contact with Mr. Brown it was decided that we should attempt to replicate this force action by ourselves.

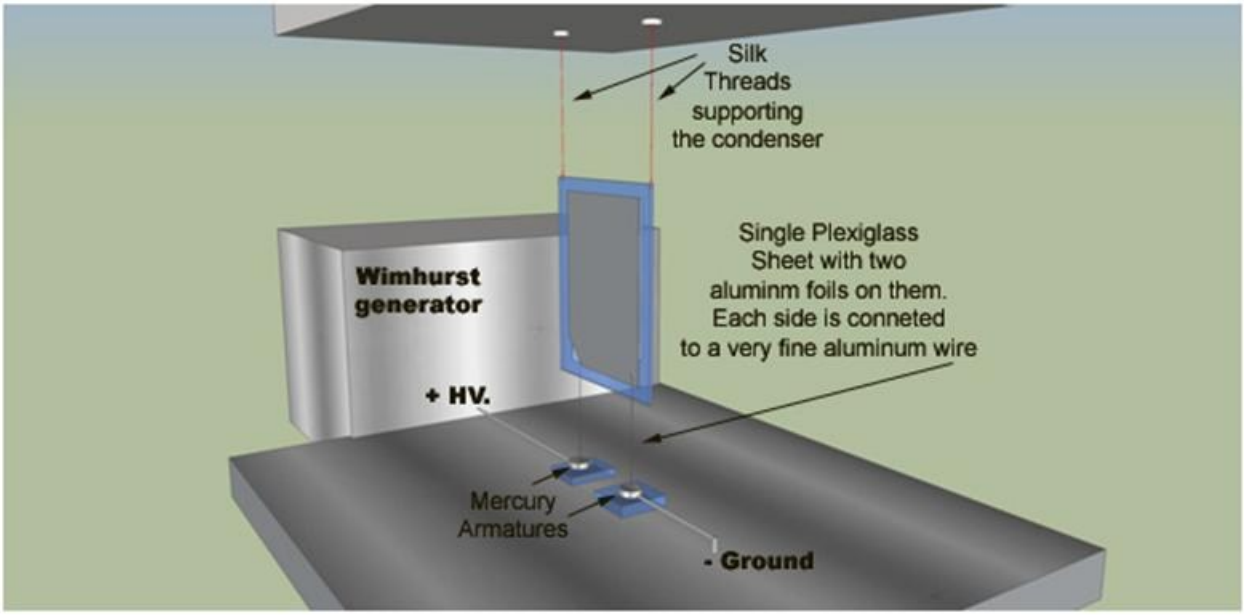
We therefore decided to fabricate the experiment using a dielectric coated Plexiglas plate which was created to be as light as possible.

The condenser itself constitutes "a sheet of Plexiglas 210 by 270mm which is 1cm thick and is coated with a sheet 170 mm by 230 mm aluminum foil 5/100ths of a cm thick." The edges of the aluminum foil have been covered with paraffin wax to even out inequalities at the edge of the foil.

To this was attached (as per figue1, page 20 of the annexed section A 1) - two aluminum 5 cm long wires with a diameter of 1mm each.)



This Original drawing is now illustrated using a 3 dimensional model (seen below)



The wires were connected to two armatures consisting of two small containers filled with mercury in which the wires are soaking in and then attached to the condenser plates using paraffinic screws.

The completed condenser is suspended by two silk threads 2.25meters long.

At this point in time, the only high voltage Wilmhurst generator we possess, -is a small with a 260 mm disc. The apparatus is capable of generating 20kV (electrostatically) (with a maximum current capacity of approximately 10^{-5} amps).

We have witnessed a displacement of our test condenser from negative to positive. This is to say "the positive face moves forwards" about 5mm. for a charge of 10kV.

This type of displacement is witnessed no matter which direction the apparatus is oriented in.

If the high voltage generator is connected to the reverse side of the condenser (the first side having been assigned "Ground") then the displacement reverses direction.

After a few minutes of observation we discovered that the condenser reverses slightly after an initial time sequence of voltage charge, however it remained within this "equilibrium state position" and its "original maximum charge position" and returns only to its original position after it has been discharged.

We were unable to distinguish if the displacement of the condenser was due to the Biefeld Brown force or a simple build-up of electric charges over the surfaces of the condenser.

Can we conclude that the effect was caused by some sort of terrestrial magnetism derivation? Two reasons exist to give us a negative answer.

1. Qualitatively

A magnetic field action can only take place in an electrical circuit when current is consumed. The "pendulum apparatus" which consists of two thin sheets of aluminum foil supported by a thin sheet of Plexiglas along with the paraffin screws does not constitutes any kind of ferromagnetic device because these substances can only be diamagnetic in nature. Regardless, -any diamagnetic materials existing within the presence of a uniform field is under no force effect of any kind.

A terrestrial field effect cannot manifest itself upon anything other than the mobile conductors but only proportionally to the intensity of the field which traverses them.

In the pendulum experiment we can only conclude two such coupling effects:

- One coupling effect at the vertical axis of the voltage conductors, and

- The second effect on the horizontal axis, and in parallel to the condenser (applied on the condenser and on the connecting fixed wires)

2. Quantitatively

We have determined through experimentation that; In order to move the condenser in parallel, the force perpendicular to the armatures must be estimated at approximately 0.24 grams or 250 dynes.

The coupling necessary to produce such a deviation equivalent on one surface must be in the order of a few dynes. Thus the coupling effect on the vertical axis has a value equal to:

$$L = 2d \times \frac{l}{10} \times H \times l \times cos\theta$$

Whereas: l = length of the voltage carrying conductor (10 cm)

H= Horizontal component of the earth field (0.2 Gauss)

2d= distance separating the voltage carrying conductors (20cm)

I= condenser leakage current intensity (Amperes)

$cos\theta$ = field angle of the condenser plates

The calculated best position effects (with the field in parallel to the plates) would be:

$$L = 20 \times \frac{l}{10} \times .2 \times l \times 10 = 4.1\ dynes\ \times cm$$

Which translates to "f" equals 2 x l/10 =.2 x l dynes

We are uncomfortable with trying to calculate the anti-torsion reactive effect of a condenser suspended by two silk threads, however, in order to cause a **4mm deviation** we must count on the application of a least a few dynes. This is just another way of saying, "**there should be a flow in the order of several amps**."

In contrast, a large volume Wilmhurst generator is capable of sourcing approximately 10^{-4} amps.

Our smaller experimental Elmhurst generator is perhaps capable of sourcing 10^{-5} Amps at its maximum voltage output and performance capabilities.

Annexed section 1.2

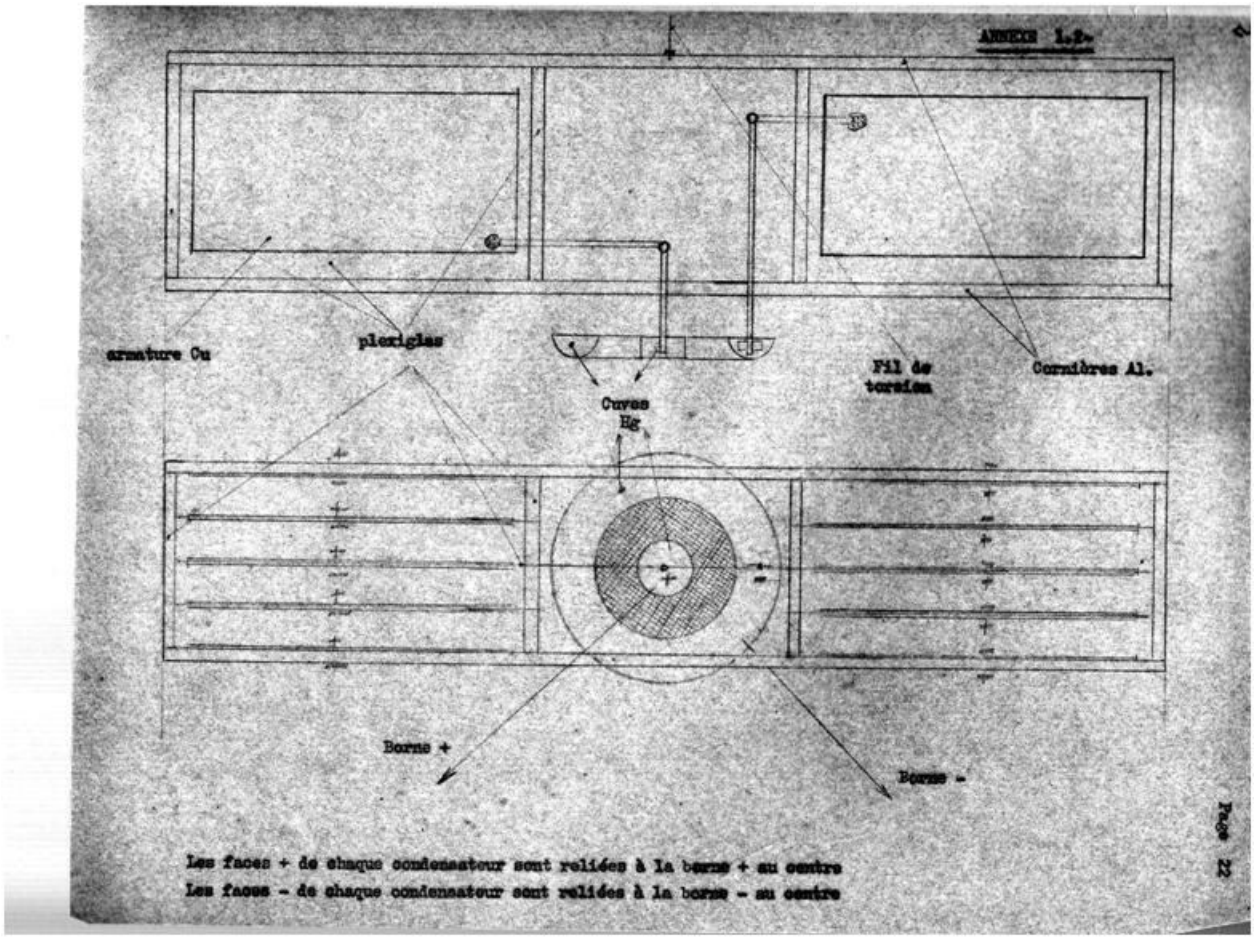
The results of experiments conducted in annexed section 1.1 did not force us to conclude any quantitative values however this was not a negative conclusion or reject any of the affirmations which constituted the Biefeld Brown Force effects. Instead we decided to build a secondary experimental approach to determine whatever forces we were capable of detecting.

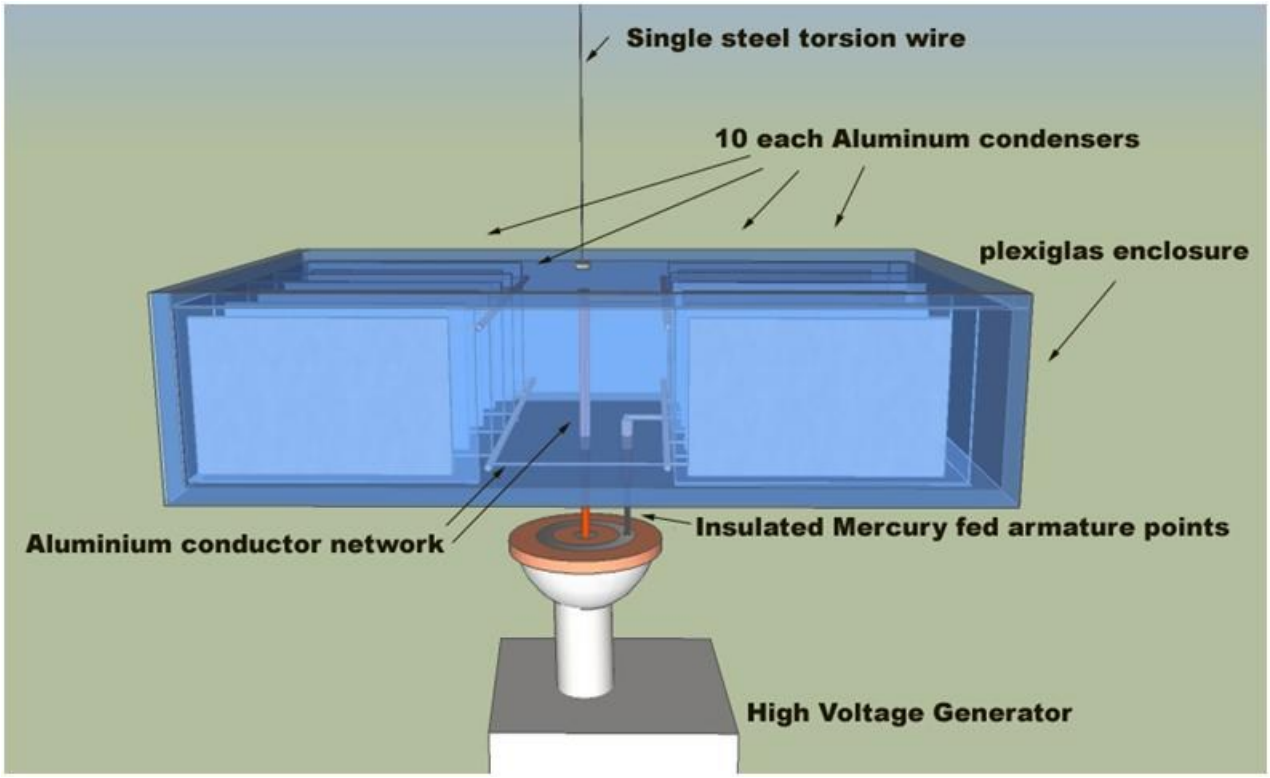
This time we decided to build a torsion pendulum balanced so that it remained perfectly horizontal but was loaded with a battery of condenser plates.

In this experiment again the Elmhurst generator was put to use to generate the required high voltage.

The pendulum device we constructed was actually conceived as a rectangular parallelepiped, which is a right parallelepiped with a rectangular base>

Within this Plexiglas encased box was mounted ten separate Aluminum foiled covered Plexiglas dielectric type condenser plates build similarly to the first experiment we started off with. The completed assembly was sturdily built so that the very center of the rectangular box was both the feed point for the positive electrode and the dead center of tis point is where a 17/100th of a meter steel wire was anchored to the apparatus. When left suspended from this single torsion wire the apparatus stood balanced horizontally so that the center positive electrode and secondary negative electrode were capable of spinning through a two sectioned insulated bowl containing mercury and acting as a minimum resistance armature connection point to the high voltage generator sitting directly under this armature point. The original plans for such as device is shown here and a three dimensional model is seen beneath the drawing:


ANNEXE 1.2.
armature Cu
plexiglas
Fil de torsion
Cornières Al.
Cuves Hg
Borne +
Borne -
Les faces + de chaque condensateur sont reliées à la borne + au centre
Les faces - de chaque condensateur sont reliées à la borne - au centre
Page 22



After having successfully stabilizing this assembly at zero levels vertical and horizontally, we applied the high voltage to the apparatus. The apparatus abruptly twisted such that the negative plates were chasing the positive plates.

These test results showed a curve related to the continuous applied high voltage is the indication of an active twisting force however since our experiments were limited to the available high voltage source of this era, it became difficult for us to decide if the twisting action produced under the high voltage parameters available to us at the time were a definitive proof of the Biefeld Brown Force or simply an accumulation of several other actions arising from the several charge accumulations on the plated areas.

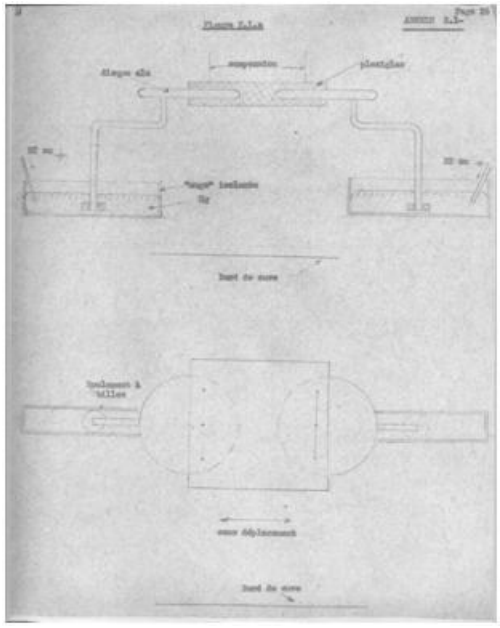
Annexed section 2.1

Displacement of a condenser which is submerged in a tub filled with transformer oil. This is the first experiment by Mr. Brown in 1955 and it was performed on his first trip to Paris.

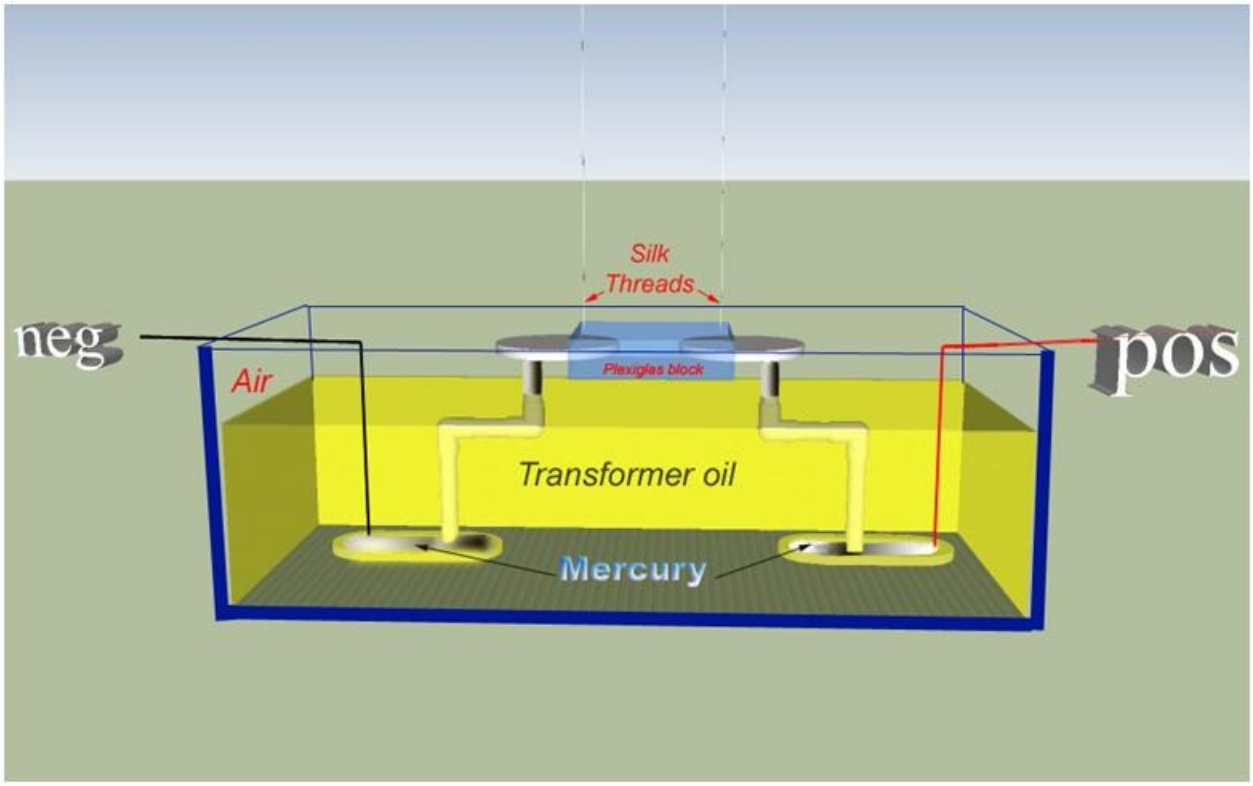
The very first condensers fabricated exclusively for these experiments were constructed under the guidance of Mr. Brown himself. The apparatus was reduced to its simplest components. Two separate copper tubes mounted in parallel using a Bakelite bar. The device was both simple and extremely light weighted and functioned correctly.

After a while our team discovered several unique advantages and disadvantages during the testing of dielectric medium of several types such as air oil, and the vacuum. This testing under various configurations led us to the conclusion that we should decide to build a unit composed of two disc separated by a Plexiglas insulator.

This experiment set-up consists of two discs suspended each by two silk threads which were anchored to a ceiling beam sitting 6.50 meters above ground (see Figure 2.1.b). Each disc is electrically conducted to by way of a bent aluminum rod which is then soaked in a Plexiglas bottom cut-out with its own tub of mercury which is used as an armature so as to allow the maximum liberty of lateral movement. Each Mercury tub is electrically connected to the high voltage generator using an insulated wire. The complete assembly is suspended inside a large tub shaped tray filled with transformer oil.



(Figure 2.1.b) The original diagram of this 1956 experiment has allowed us to create a 3 dimensional model which is shown below:



Two experiments were conducted using this set-up in one case. i.e. the positive high voltage was conducted to one armature while the second armature was grounded.

In the second set-up the high voltage positive as introduced on one armature whereas the high voltage negative was conducted to the second armature.

In both cases we observed the following results: when voltage is applied to the apparatus the complete moveable assembly moves rigorously with the + side moving forwards. The motion is so abrupt and definitive that our suspended armatures end up bumping the far side of the mercury tub where the armatures are abruptly stopped and sometimes bounce away from..

Shortly thereafter the apparatus slowly returns to its idle equilibrium point at which point we observe an "oil current" moving from + to -. The apparatus thus maintains counter-current attraction and a instability related to the proximity of the metallic enclosure in which this experiment is being performed in.

When the high voltage generator is turned off and discharged completely we noticed that the apparatus would again return to its central equilibrium point, within the limits of a ball-bearing assembly immerged in a tub of mercury.

In conclusion we have determined that the motion can't be attributed to the attraction between the electrodes and the sides of the enclosures. This is an important part because the effect itself is polarized and for another reason, even if we were disposed to use a moving exterior wall shape for enclosing the complete experiment. The motion phenomenon probably remains unchanged.

What appears to remain impossible is our ability to study the effect of **U** and of **dU/dt**. It still does seem however that a potential difference between the two electrode armatures affects the displacement of the apparatus, and that whichever armature polarity the voltage does conduct to ground makes no difference in the experiment.

These experiments never surpassed the qualitative side of the measurements.

Only a more elaborate round tub could allow for quantitative measurements. This also means that would have to undertake "ballistic" type measurements, however the moving transformer oil would render these experiments quite difficult to achieve.

Annexed Section 2.2-

The Carrousel

This is the second experiment conducted during the first Trip to Paris by Mr. Brown (June-July 1955)

This second experiment was not designed to provide us any additional quantitative or qualitative information about the Biefeld Brown force. Rather, -It was designed to demonstrate If Mr. Brown's apparatus has the capacity to become a fully functional electro-kinetic propulsion system.

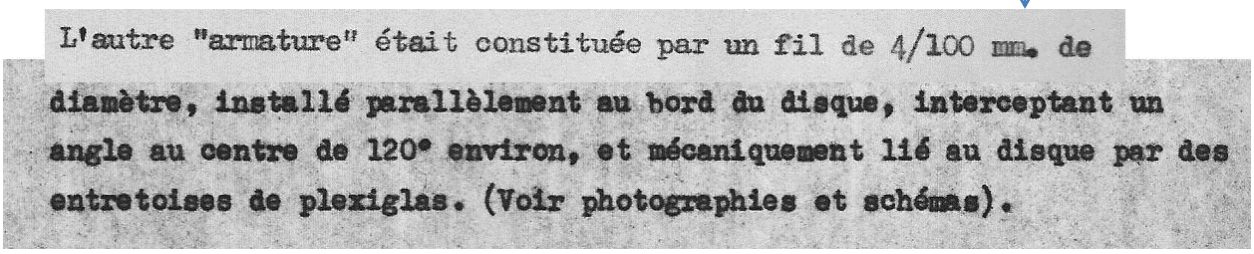
As with our first experiment, we undertook to create our equipment as carefully as possible and in full accordance to the specifications that Mr. Brown supplied us with.

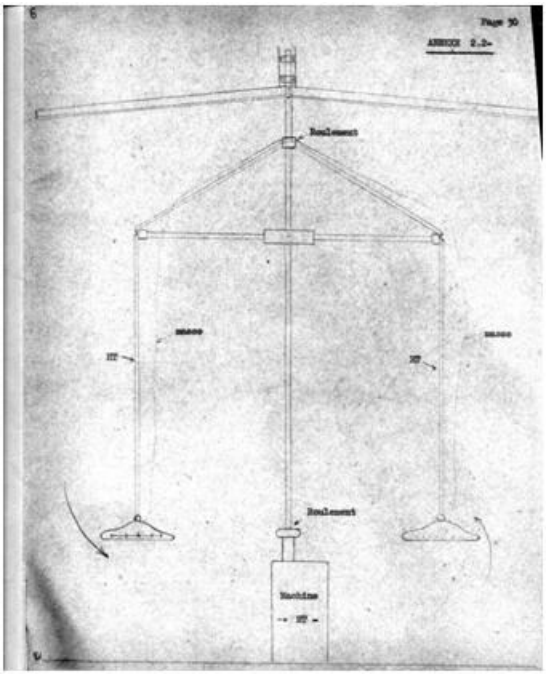
What we actually constructed was a merry-go-round type device (which we ended-up calling the carrousel) . We built a horizontal arm 3 meters long using insulated tubes which allowed a high voltage cable to feed through it. The wire also suspended from both end of the horizontal arm until it sat about 2 meters from ground. The arm was suspended from a ball-bearing joint harness which was mounted above in the center beam which was supporting the roof which stood 7.5 meters above the floor. The horizontal arm itself stood approximately 6 meters above ground.

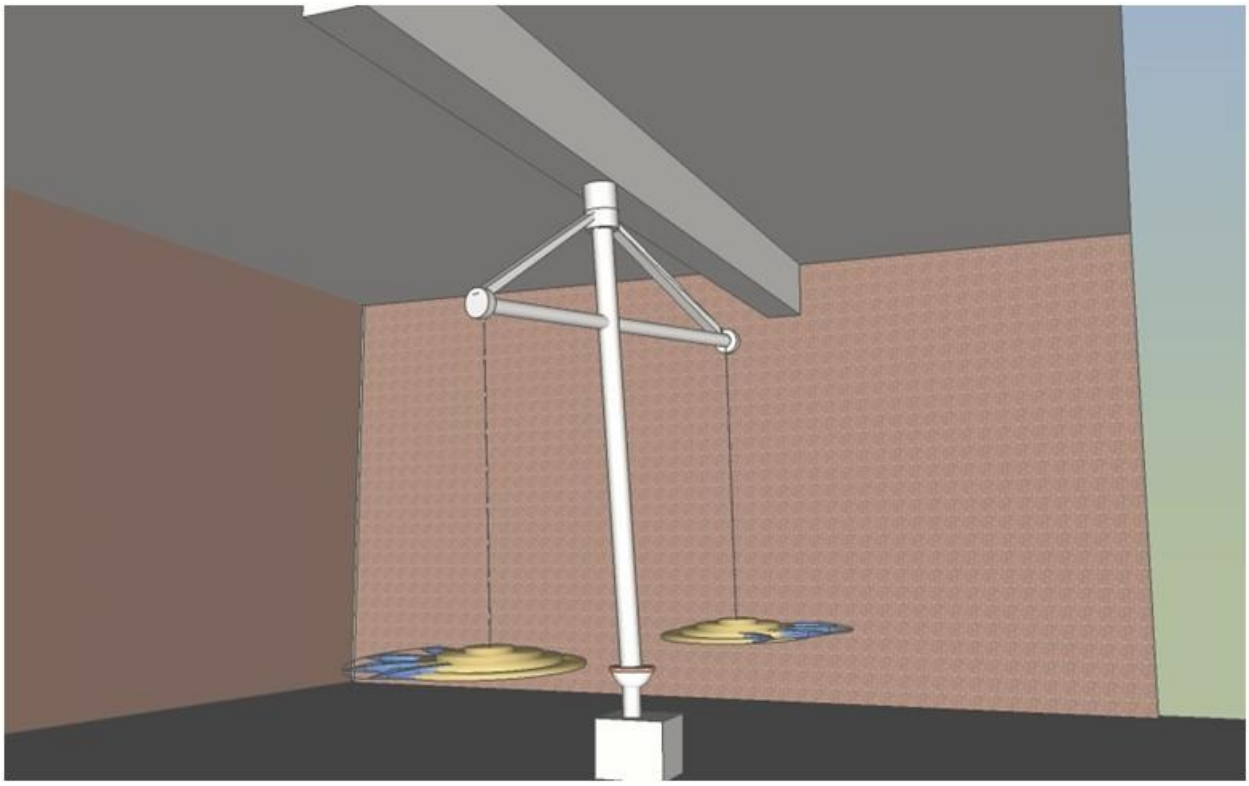
In the exact center of the horizontal arm a vertical insulator tube was suspended vertically and contained a wire which traversed the vertical tube all the way down until it reached a ball-bearing assembly which was mounted on top of the final coil of a high voltage generator. The assembly was designed and built to allow for the maximum freedom of rotation of the vertical tube assembly.

On both ends of the suspended cables one each Duralumin disc 750mm in diameter which were also dome shaped. The discs were attached to the high voltage cable in such a fashion as to assure a vertical and symmetrical axis to the attached high voltage cable. One of the discs constituted a single armature of a condenser while the second armature consisted of fine electrical wire 4/10^{ths} of a millimeter in diameter and fixed away from the edge of the disc across an angle of approximately 120 degrees using Plexiglas stand-offs. This second wire was then allowed liberally to be attached to the ground section of the high voltage generator (see diagram and 3 D model).

We believe a simple error was made here


L'autre "armature" était constituée par un fil de 4/100 mm. de diamètre, installé parallèlement au bord du disque, interceptant un angle au centre de 120° environ, et mécaniquement lié au disque par des entretoises de plexiglas. (Voir photographies et schémas).





During these experiments conducted during the time period mentioned the discs were fed a negative high voltage supply and the wire fixed away from the edge was grounded.

The graph curves 1 and 2 shown indicate variations in the high voltage supply as supplied to the discs as well as the forces produced and the current consumption based on changes made in the distance between disc and wire Curve 1 and length of wire Curve 2.

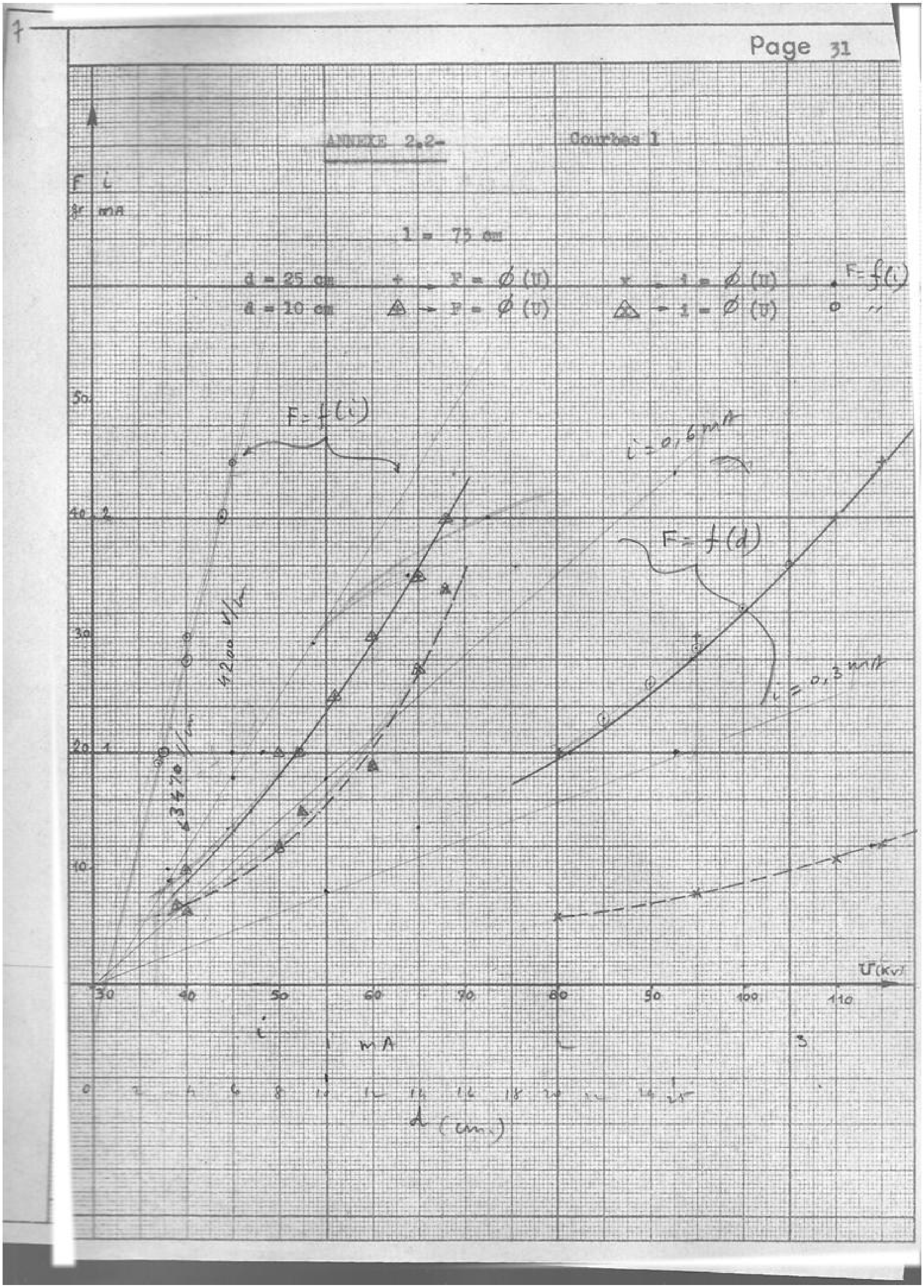
The results show a deep parabolic convergence in the curve related to the supplied voltage.

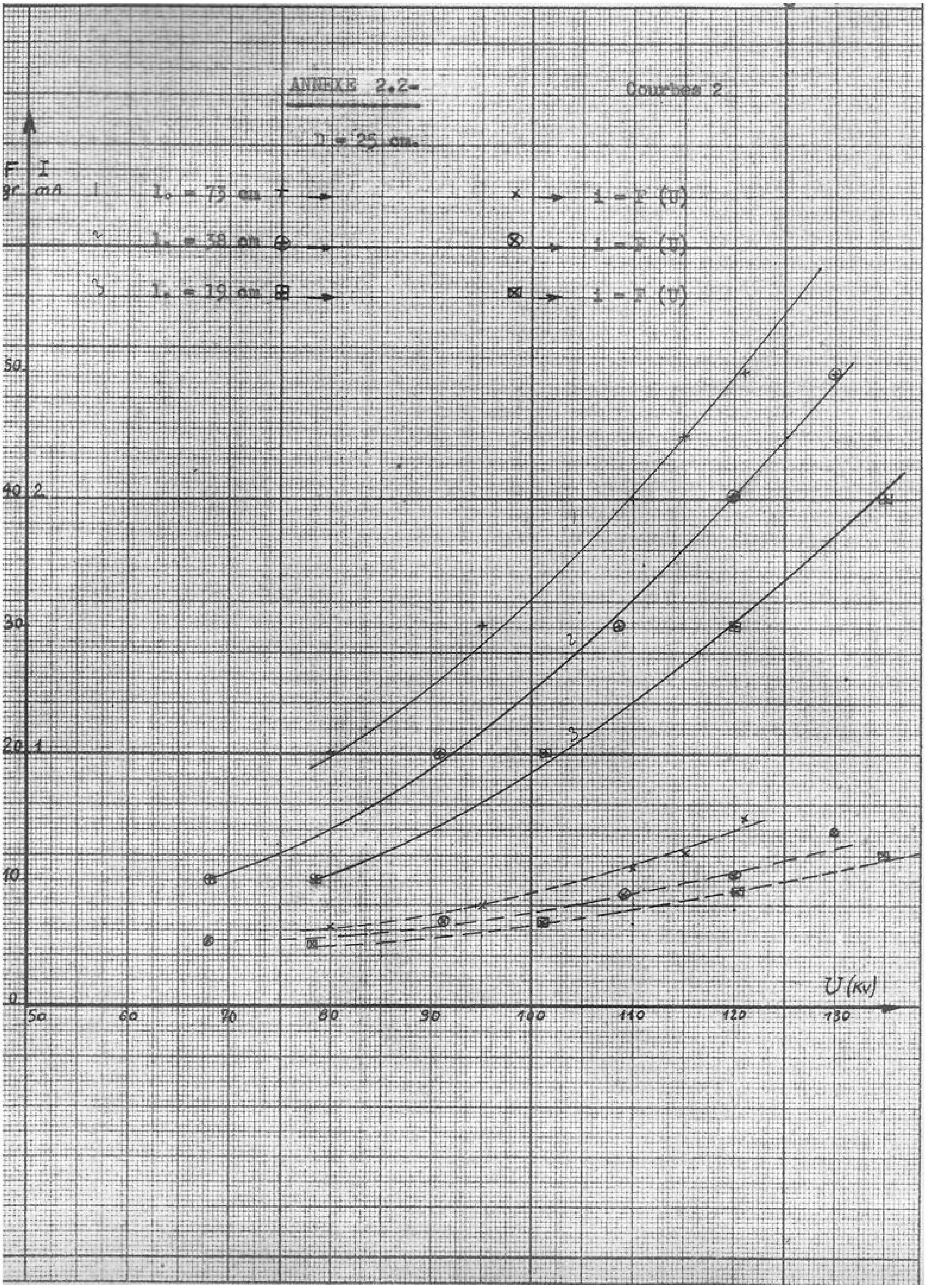
It also converges over the length of the wire.

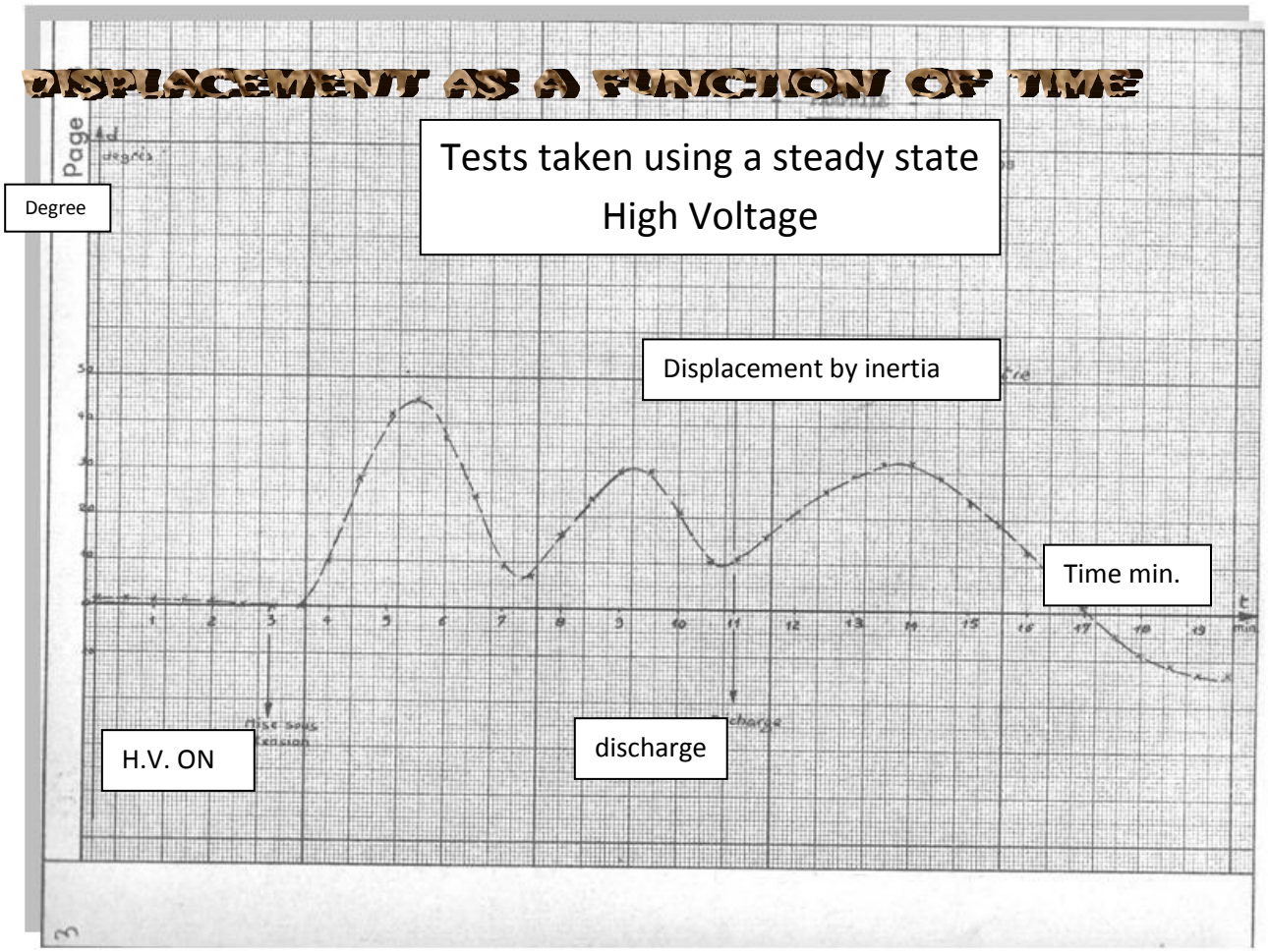
It also shows a divergence with respects to the spacing between disc and wire despite an increase in voltage.

In conclusion this experiment demonstrates a force in the order of 0.75 g/watt which encounters a divergence in value as the ambient air becomes more ionized.

Curves 1 and 2 and the 'displacement vs. time' graphs are followed by pictures taken circa 1955-56.


Page 31
ANNEXE 2.2-
Courbes 1
F gr
i mA
l = 75 cm
d = 25 cm + → F = ϕ (U)
x → i = ϕ (U)
F = f(i)
d = 10 cm △ → F = ϕ (U)
△ → i = ϕ (U)
F = f(i)
F = f(d)
i = 0,6 mA
i = 0,3 mA
U (Kv)
i mA
d (cm)


ANNEXE 2.2-
Courbes 2
D = 25 cm.
F gr
I mA
1 l_0 = 73 cm + → × → i = F (U)
2 l_0 = 38 cm ⊕ → ⊗ → i = F (U)
3 l_0 = 19 cm ⊞ → ⊠ → i = F (U)
50
40 2
30
20 1
10
0
50
60
70
80
90
100
110
120
130
U (Kv)


DISPLACEMENT AS A FUNCTION OF TIME
Tests taken using a steady state
High Voltage
Degree
Displacement by inertia
Time min.
H.V. ON
discharge

Annexed Section 3.1

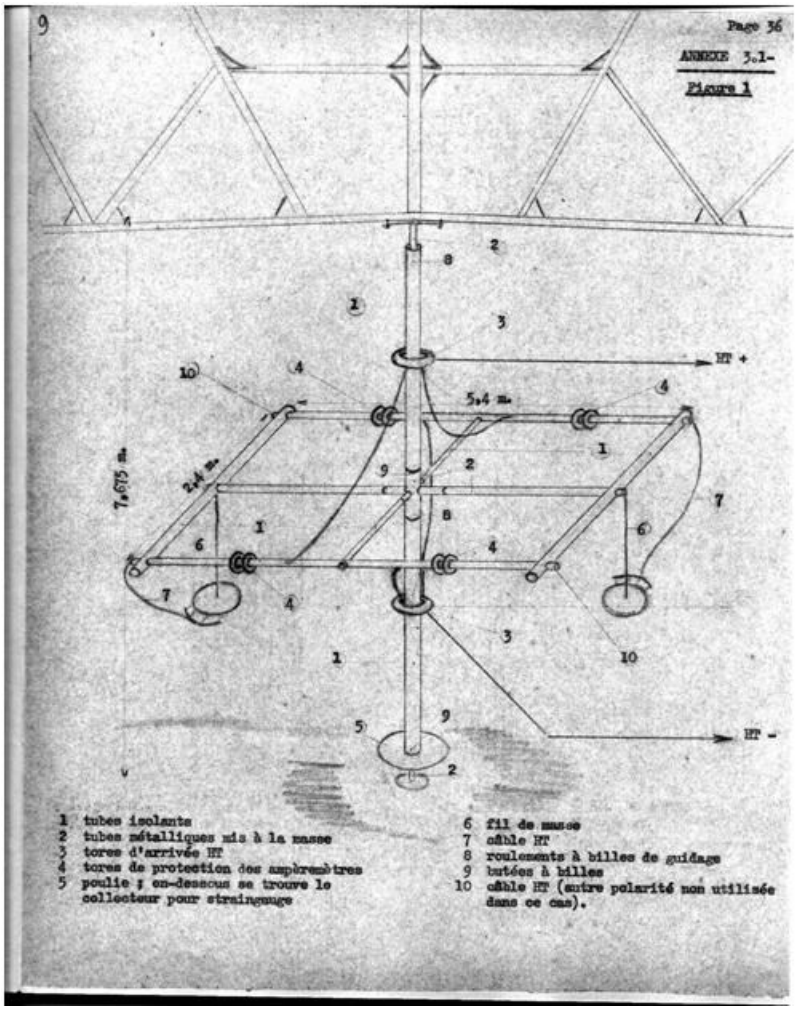
The Gyron

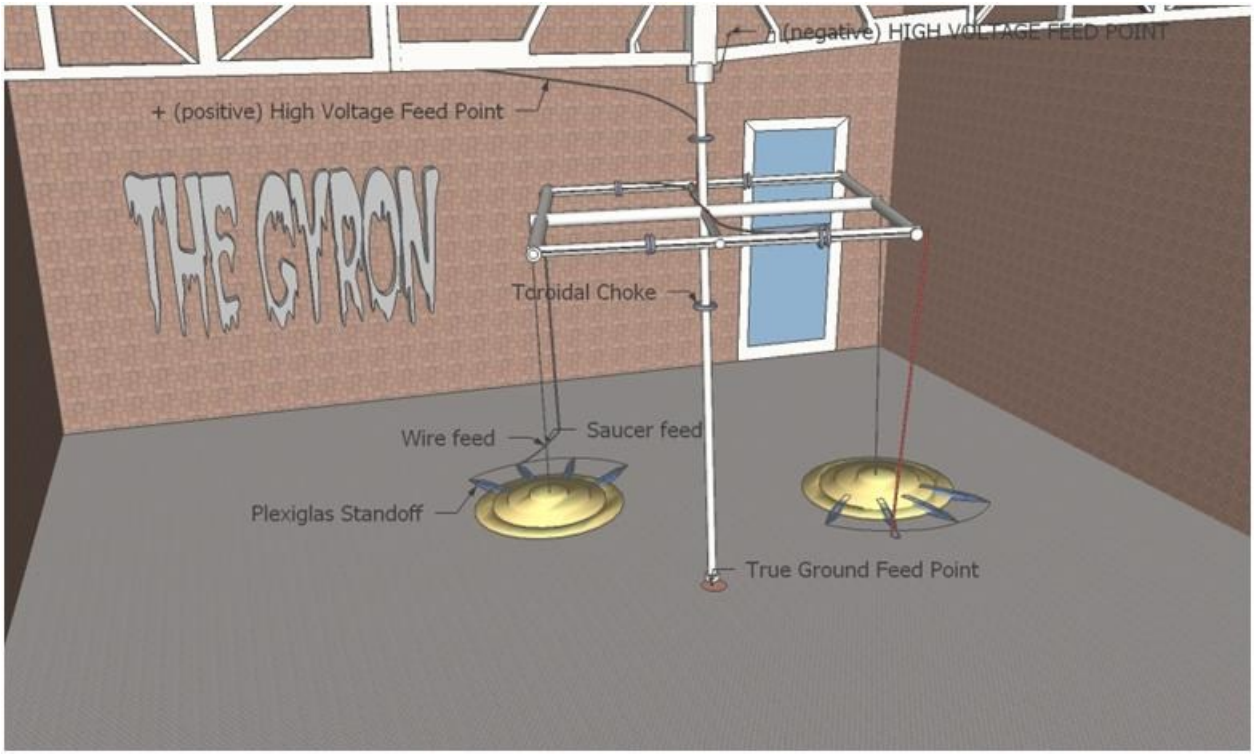
First Experiment realized since Mr. Brown's departure.

The Gyron hereby presents itself as an assortment of Merry-Go-Round type parts which have the liberty to turn around a vertical axis.

A rectangular construction of isolation tubes capable of successfully conducting a high potential of 250 kV.

(See Figure 1 and take the 3d model animation tour by clicking this button.)





The HV receiving armatures are operating through a special Ball-Bearing Assembly of insulating tubes surrounded by several torroidial chokes and allow conductance to occur with less leakage which manifest themselves as "FLASHES." We are trying to avoid these flashes along the longitudinal axes of the Frame assembly. A true Earth Ground Point comprises the lower portion of the frame assembly along the longitudinal axes.

Ground potentials are distributed in the longitudinal axis within the vicinity of the incoming voltage supply wires coming from generators somewhere nearby. The assembly is wired such that experiments can be conducted in both polarity and compared to a true ground potential.

Ammeters are connected in series along the horizontal axis with several torus shaped chokes between them to help avoid uncontrolled electric field discharges. All these measures were undertaken to record more accurately what the electrical characteristics were during various experiments which were conducted on the apparatus suspended from the ceiling beam.

At the lower end of the gyron a pullet has been installed to help start the turning motion and to measure the coupling action of the moving gyron.

Low current Probe wiring is connected at the extremities of the longitudinal axis of the frame structure. We can use these to measure force efforts from a safe distance.

The measured combined weight of the Gyron totals 100 Kg and makes it quite inevitable that there will be an important coupling which will create a resistance against rotation by way of the function and relative to the position of the mobile portion of the gyron as judged against any fixed point surrounding the apparatus.

See Graphic

Our Experienced with a coupling resistance of the mono-polarity experiment is known to be 118 g x m, which represents 22g at the end of each arm.

The Experiment try-outs we attempted to conduct are herein described as

1. The availability of the various brand model proved to be in the same order of strength as the coupling resistance acting against "off-the-shelf" high voltage supplies. This threw cold water on our plans to gather quantitative collections of data.

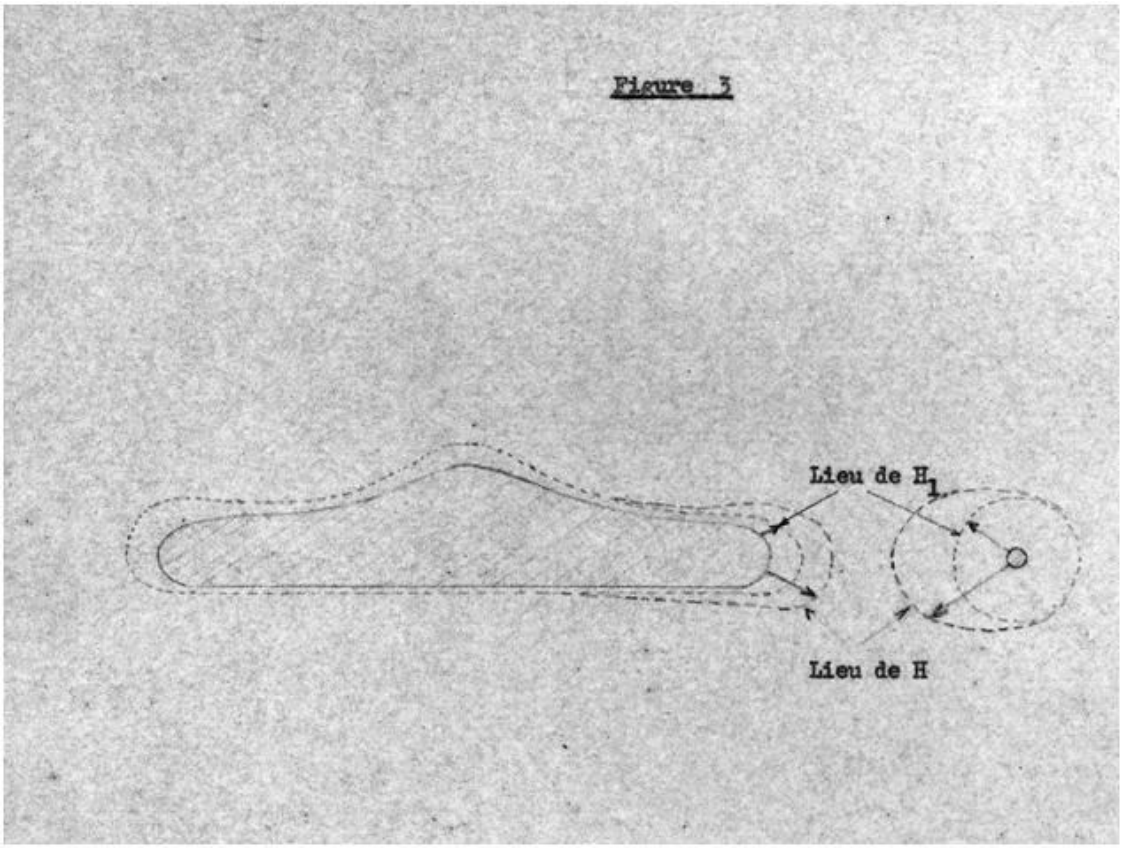
Under all condition the sense of rotation always assures motion 'wire in front," however in a limited amount of cases, the rotation seemed a bit more invigorated when the leading wire was energized with positive polarity.

We were forced to admit that the force detection experienced in the Carousel experiment was largely due to a non-polarized effect.

There was sufficient proof to consider the effect as an electrostatic reaction.

This may be explained herein:

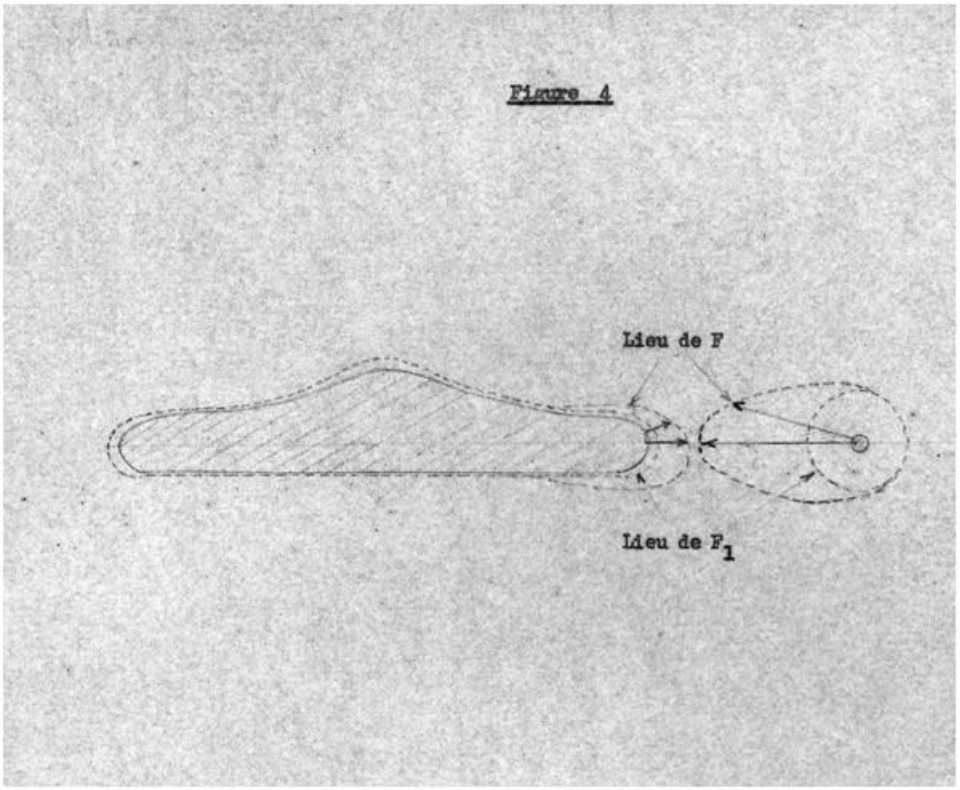
Let us illustrate (fig. 3 and 4) the coupling of the disc and the wire:



Let's assume the conductor's (fig.3) normal point-charges are evenly distributed and equi-distant from each other, the vector $\vec{H}_1$ or, more precisely, - first order approximation proportional to the curve right on the edge of the end curvature of the edge of the disc, of course we are supposing that the disc is the only thing being "electrified."

Next let us deform the curvature while keeping in mind, -what the effects of the wire are upon the disc, or else,-what the effects are; - disc upon wire. The results were;- that a new set of curves demonstrated another set of $\vec{H}_1$ vectors.

We have seen (in 1957) that the torsion effect was grossly proportional to the square of $\vec{H}_1$; therefore we are capable of tracing as before (see fig 4)



Point vectors of the FORCE system are as such:

$$|\vec{F}_1| = \lambda |\vec{H}_1|^2 \quad \text{and} \quad |\vec{F}| = \lambda |\vec{H}|^2$$

In the drawings above the vectors are shown for the sake of commodity. We would have to change the directional sense to represent the "Torsion Force."

The resulting force on the system is equal to:

$$-\iint d\,\mathrm{F}\cos\alpha\cos\beta\,d\,\mathfrak{C}\ ,$$

Whereas: ∂ is defined as the ***SURFACE Element*** and α and β are normal angles on the plain of the base of the disk extending the field

The calculation is inextricable for any other case than that of the usage of two spheres (and even then). In any case we are seeing general results showing:

$\vec{\mathrm{F}}$ is very well directed and flowing in a direction which displaces itself wire in front of mass.

During a portion of the experiments conducted, one of the two electrodes was grounded, hence the repatriation of one of the envelopes emitting from the extremities of $\vec{\mathrm{H}}_1$ and $\vec{\mathrm{F}}$ on the conductor.

The results were no less than the traces shown in the accompanying curves of both $\vec{\mathrm{H}}_1$ and $\vec{\mathrm{F}}$.

As we mentioned earlier in this report our primary results shows that we need more sensitive method of detecting the effect we are looking for because it is being masked by residual electrostatic effects.

Annexed Section 3.2

Escarpolette

This experiment was conducted in January 1956 in an effort to try and quantify the propulsive force as a summation of the torsion force along with Biefeld/Brown force we are looking for.

The disc/wire assembly was suspended using 6 meter long insulated Silk strings. The high voltage connections were assured using mercury bowls in which the suspended "armature wires" were dipped into.

One feed point was for the wire, the other was for the disc feed. (a third unit was connected to a second wire-when used).

The curve tracings 1 through 4 are the results of tests using two separate discs:

- Curves 1 and 2 are the results observed while using a rudimentary shaped disc which was very old and full of dents
- Curves 3 and 4 were obtain from brand a new flat metallic disc (Schema2)

We note that Curves **F=f(U)** curves present themselves depending upon which polarity is being applied. A displacement is witnessed in the intended direction however such is true during only the most precise experiments, i.e. high voltage – and + on the wire using a flat disc. Unfortunately the quantitative differences witnessed were weak and could not supply us with enough convincing evidence to carry on a serious investigation. This particular inability to witness the expected force was probably caused by the voltage feed armatures and mechanisms; (the motion or attraction / repulsion of the "feed conductors" through the mercury tubs as a result of an increase in the electrostatic charge across the two feed points).

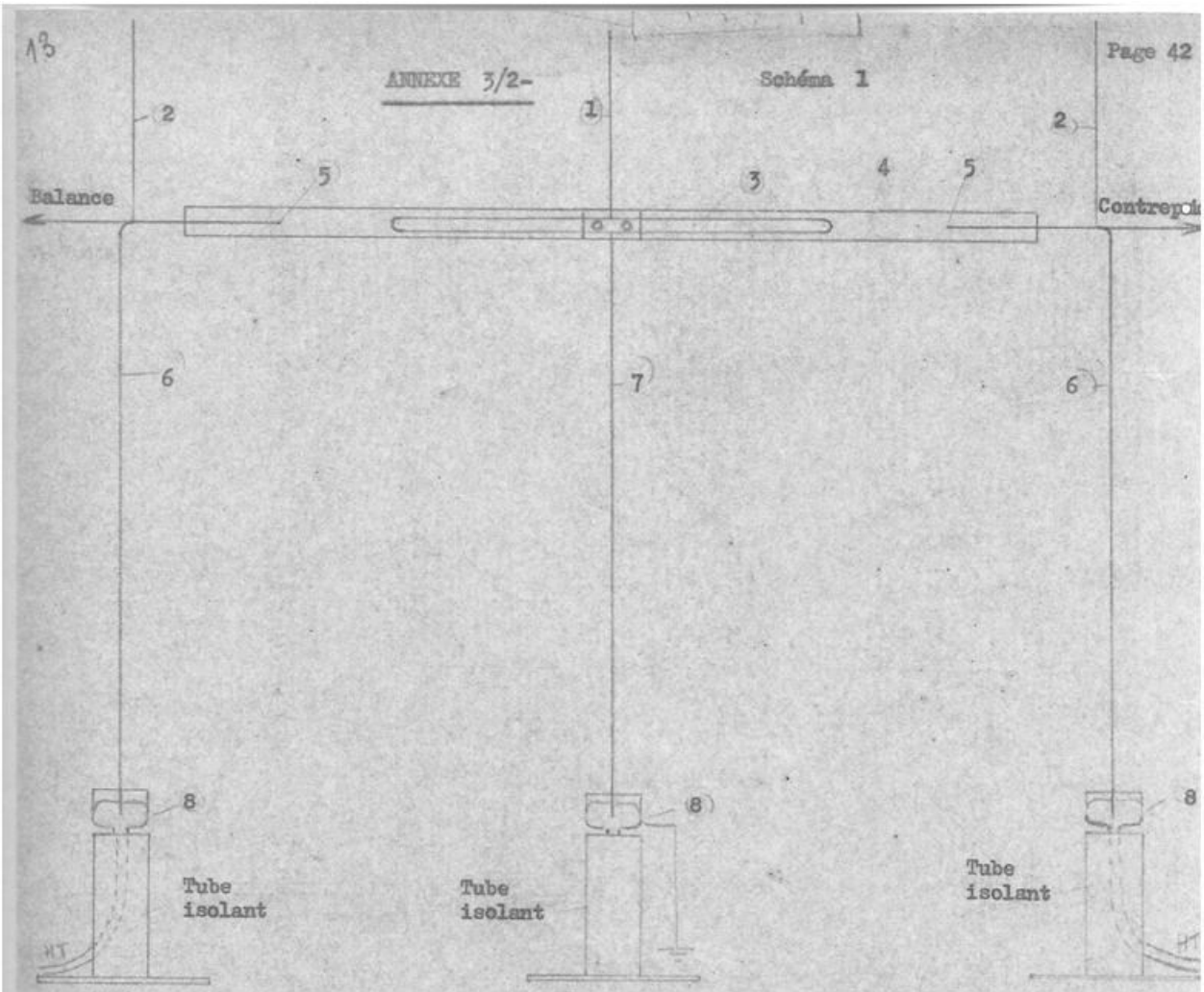
In other experiments we were able to plot curves 5 and 6. The forces obtained were a function of the energy used, and in the cases were flat smooth discs were used we lost less energy in useless ionization than we did using primitively manufactures first discs.

We see that the forces in **g/w** are **descending** as the **voltage increases** and this is evidently due to the useless ionization which occurs within the vicinity of the physical items which make up the apparatus itself.

13

ANNEXE 3/2-

Schéma 1

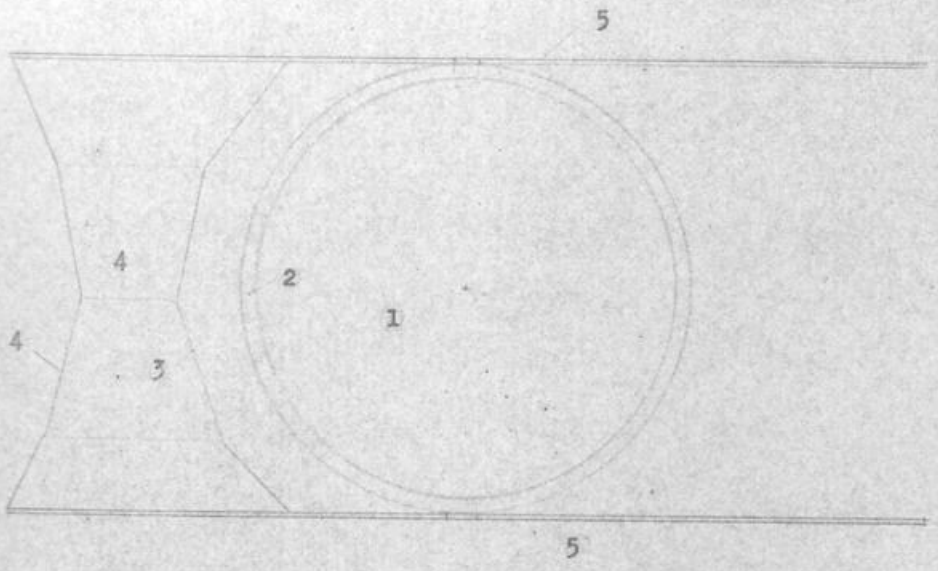


Mesure des efforts par méthode de zéro

1 Fil de soie supportant le disque h ≈ 6 m
2 Fils de soie supportant les tubes d'amenée HT
3 Disque "plat"
4 Supports de "fil conducteur", en plexiglas
5 "Fil conducteur"
6 Tube d'amenée HT
7 Tube de mise à la masse du disque
8 Coupelles de mercure.

NOTA : La figure représente l'utilisation en bipolaire ; dans le cas de mesures en monopolaire, on supprime le tube d'amenée HT correspondant.

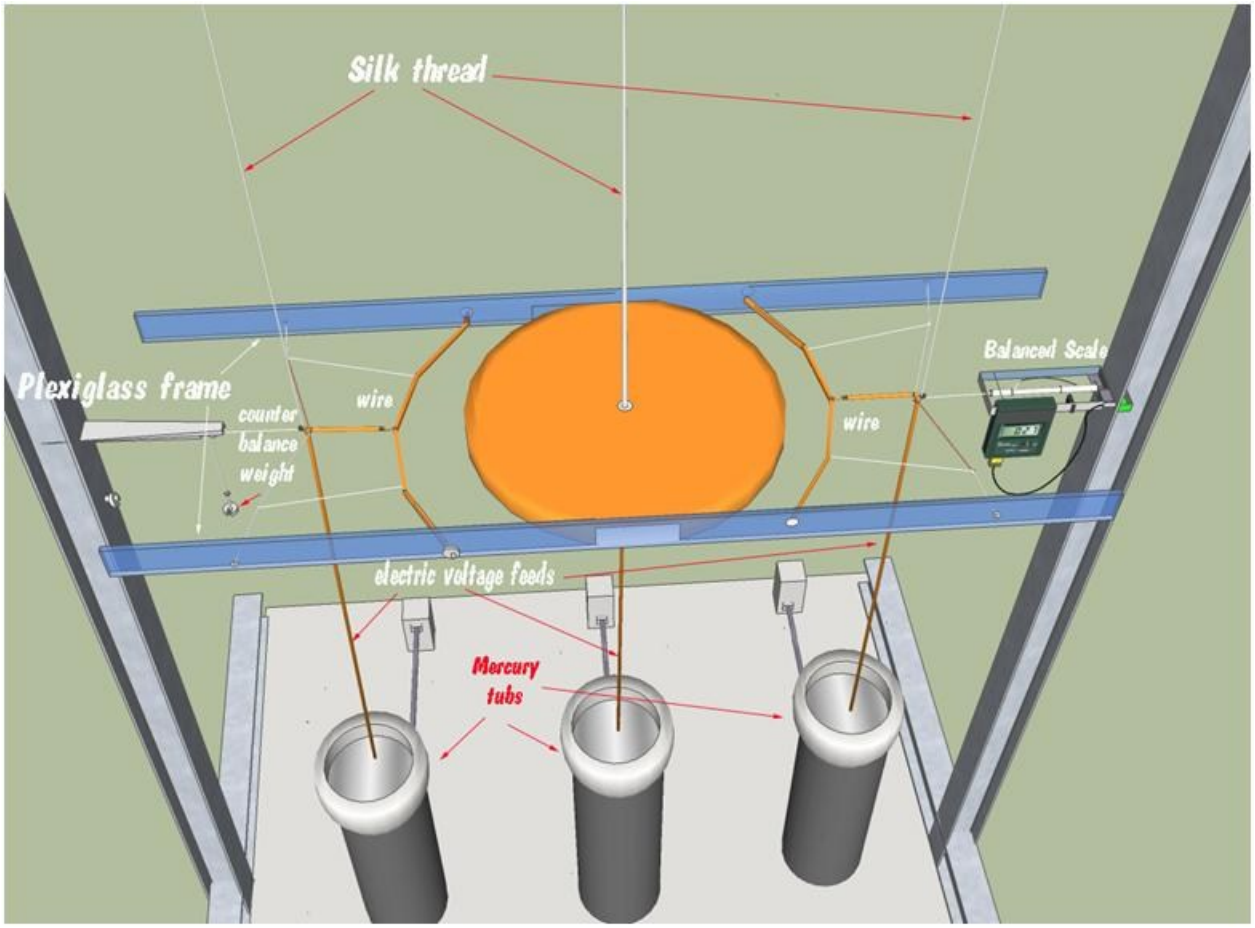
ANNEXE 3.2- Schéma 2



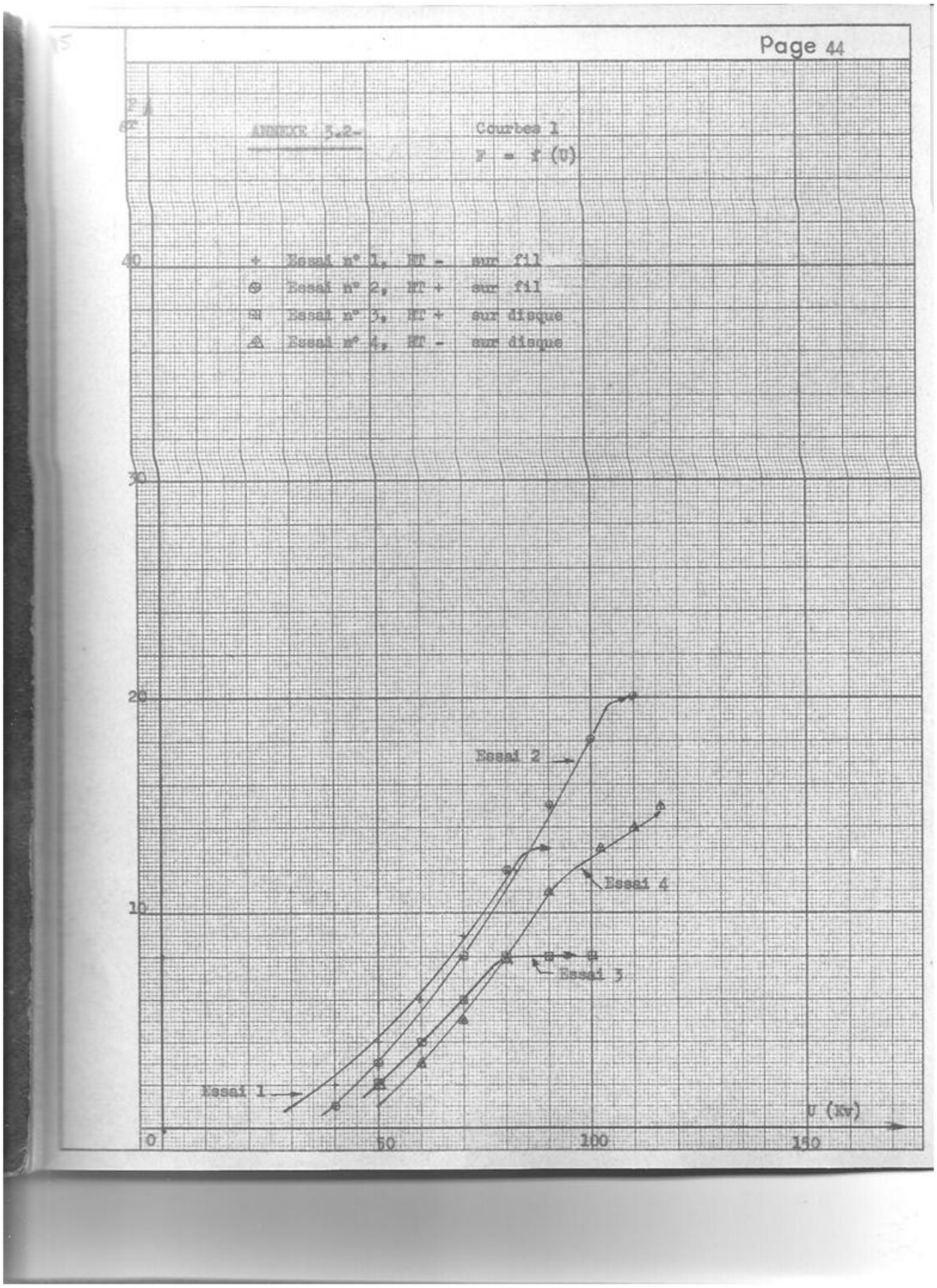
Disque "plat"

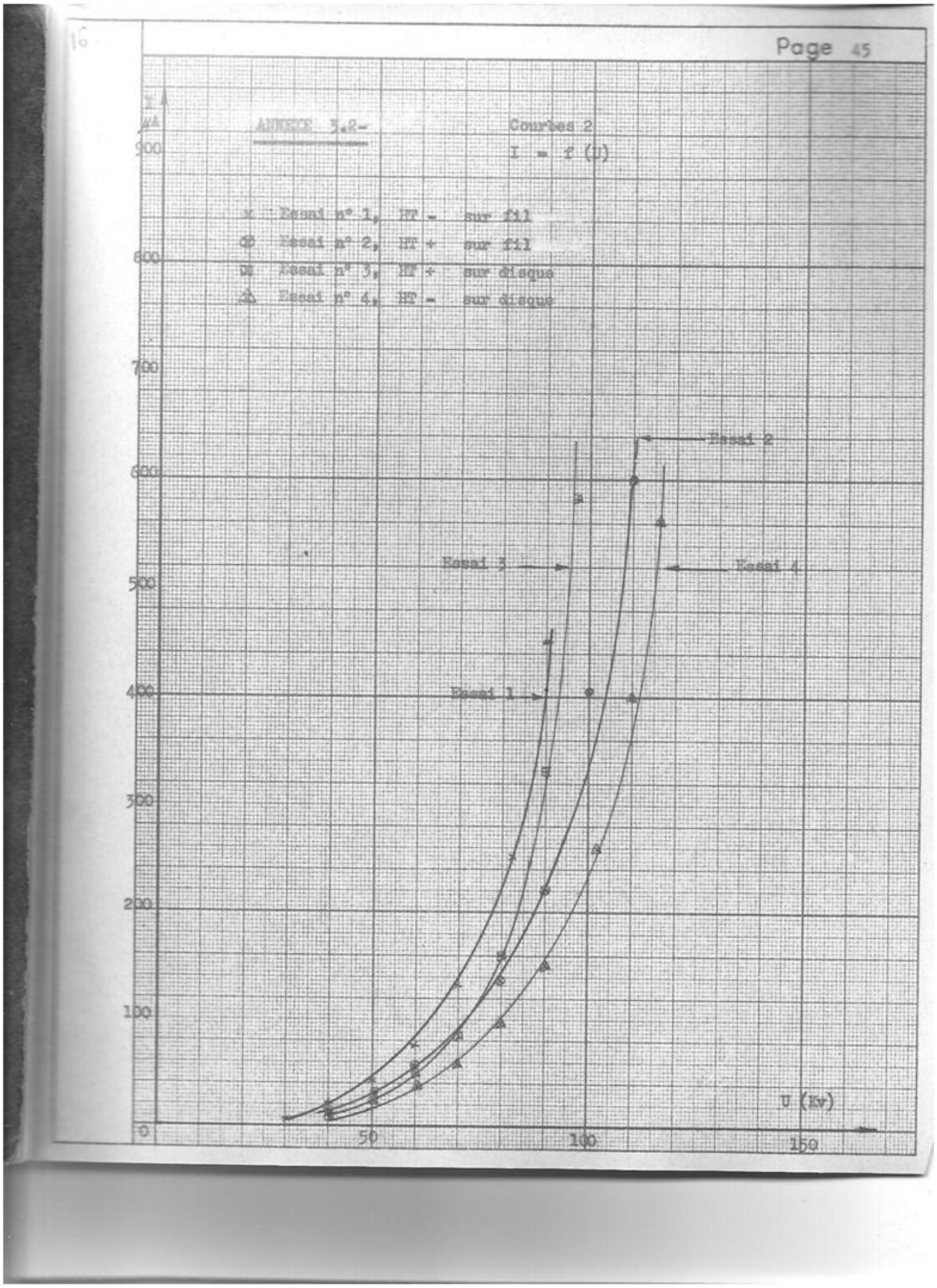
1 "Fond" du disque en tôle AU4G e = 1 mm
2 Bord du disque AU4G ∅ 23 x 25 mm
3 Fil d'acier ∅ 0,04 mm
4 Fils de soie tendant le fil métallique
5 Bandes de plexiglas supportant le fil ; ce dernier peut être placé plus ou moins loin du bord du disque ; un deuxième fil peut être placé à droite du disque.

The above original drawings were recreated in 3 dimensions as shown here;



Furthermore, an animated version of the 3 dimensional construct can be seen here:

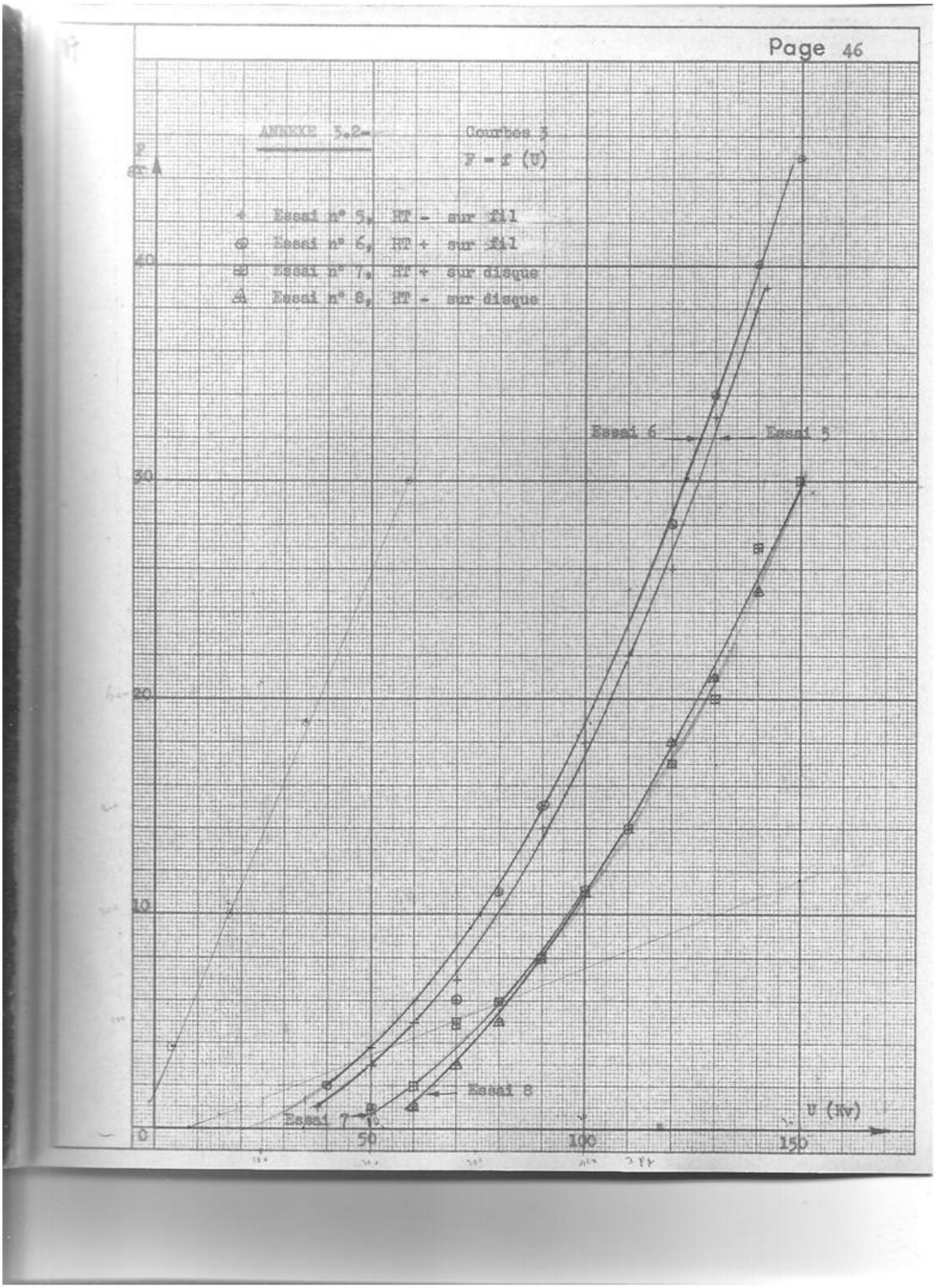

Page 44
ANNEXE 3.2-
Courbe I
F = f (U)
+ Essai n° 1, HT - sur fil
⊕ Essai n° 2, HT + sur fil
⊠ Essai n° 3, HT + sur disque
△ Essai n° 4, HT - sur disque
40
30
20
10
0
50
100
150
U (kv)
Essai 2
Essai 4
Essai 3
Essai 1

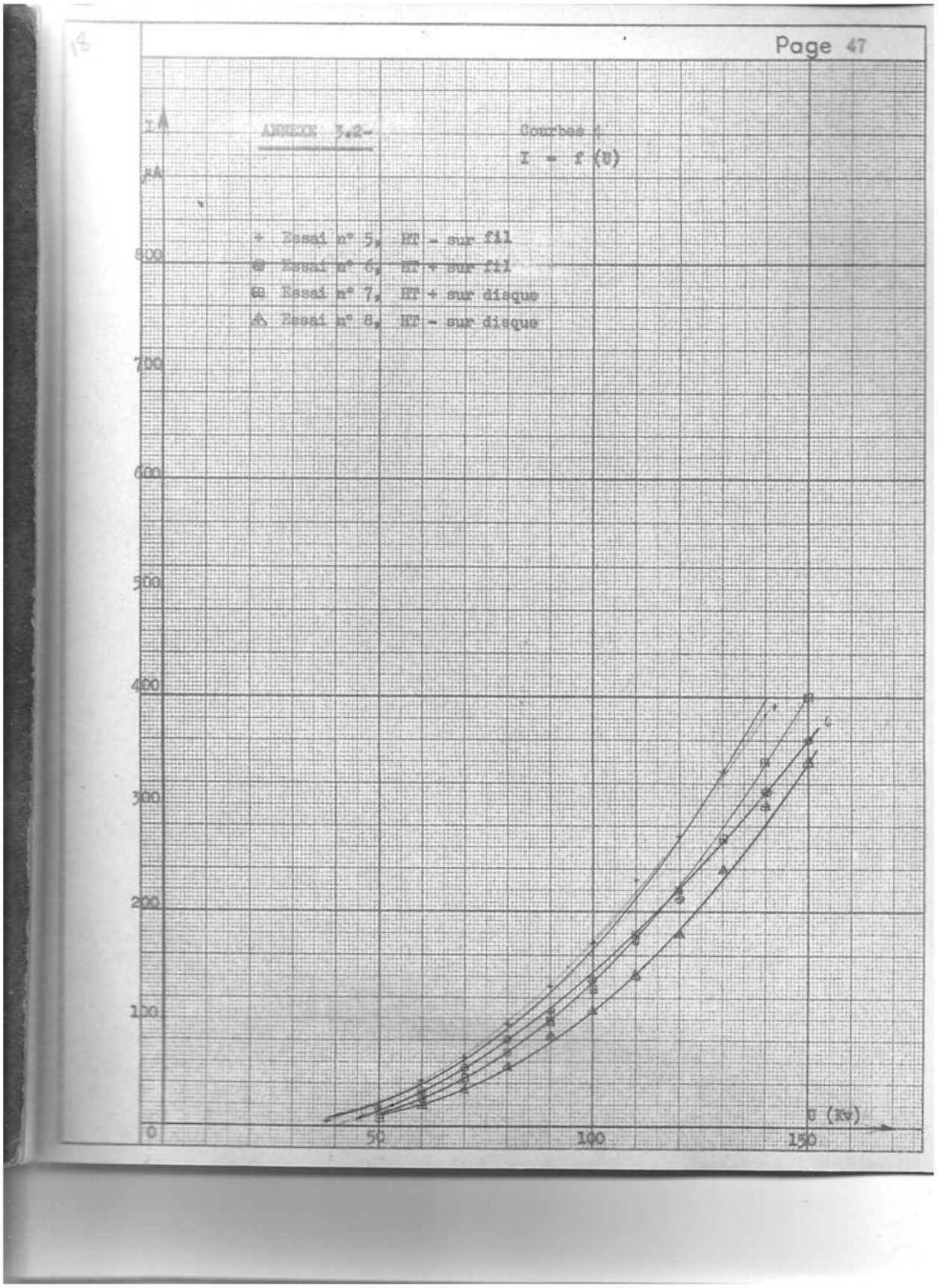

Page 45
ANNEXE 3.2-
Courbes 2
I = f (U)
x Essai n° 1, HT - sur fil
Essai n° 2, HT + sur fil
Essai n° 3, HT + sur disque
Essai n° 4, HT - sur disque
Essai 2
Essai 3
Essai 4
Essai 1
U (Kv)
0
50
100
150
200
300
400
500
600
700
800
900

ANNEXE 3.2=

Courbes 3
F = f (U)

+ Essai n° 5, HT - sur fil
⊕ Essai n° 6, HT + sur fil
⊞ Essai n° 7, HT + sur disque
△ Essai n° 8, HT - sur disque




Page 47
ANNEXE 3.2-
Courbes I
I = f (U)
+ Essai n° 5, HT - sur fil
Essai n° 6, HT + sur fil
Essai n° 7, HT + sur disque
Essai n° 8, HT - sur disque
I A
µA
800
700
600
500
400
300
200
100
0
50
100
150
U (Kv)

ANNEXE 3.2-

Courbes 5

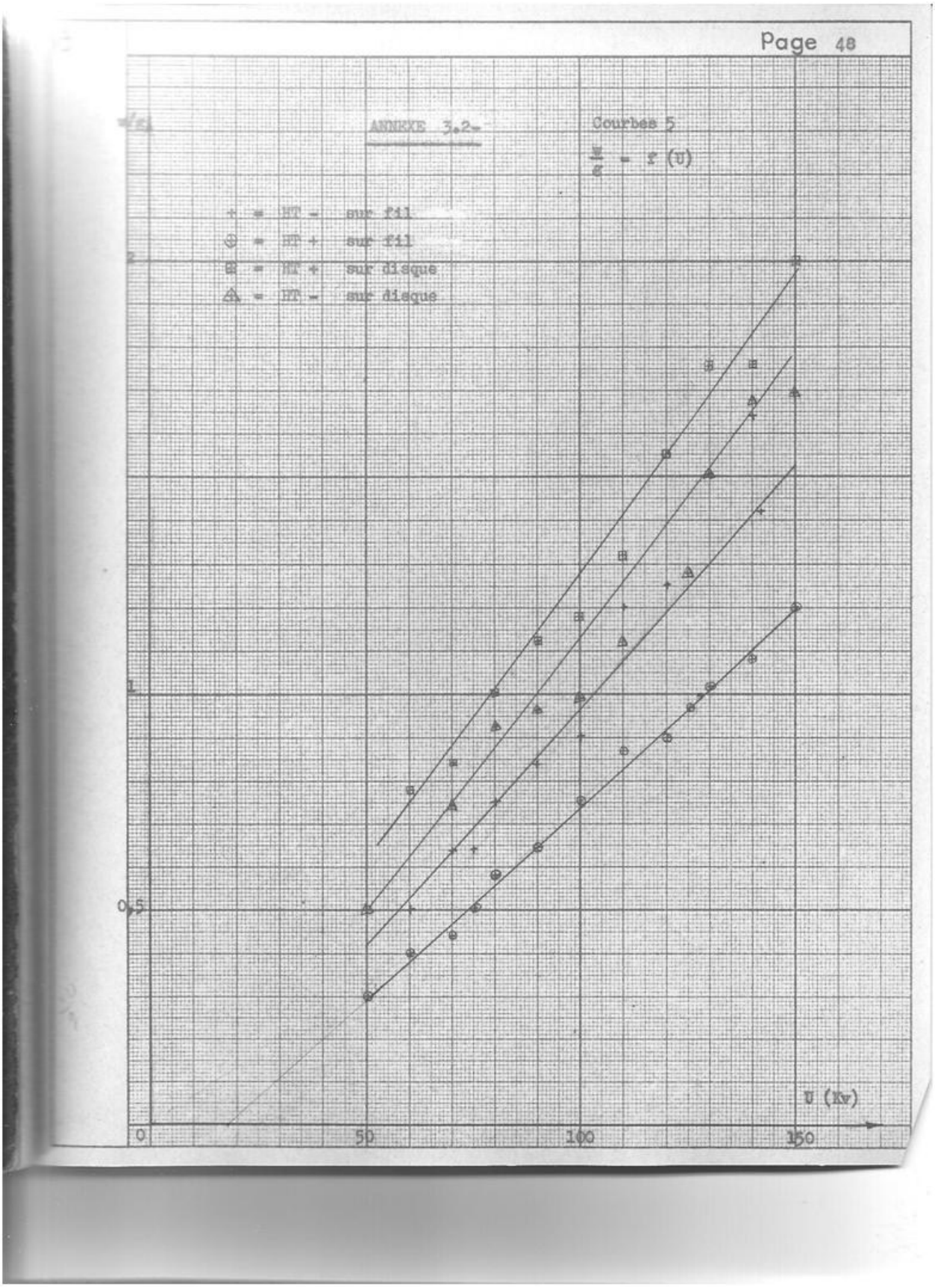
$\frac{n}{g} = f(U)$

\+ = MT - sur fil

⊕ = MT + sur fil

⊞ = MT + sur disque

△ = MT - sur disque



ANNEXE 3.2-

Courbes 6

$\frac{E}{V} = f(U)$

E/V

+ = HT + sur fil

⊕ = HT + sur fil

⊠ = HT + sur disque

△ = HT - sur disque

4

3

2

1

0

50

100

150

U (kv)

We attempted to enclose the complete rotating assembly by surrounding the metallic shield starting from the bottom armature where the bottom fed high voltage enters directly on the rotating wire assembly. We also added a Plexiglas cover on the metallic shield.

The disc/wire assembly has been completely isolated in an effort to eliminate all possible factors which would disprove the existence of the new force we are seeking to confirm. Under such controlled circumstances, all the erroneous possible explanations to the unusual behavior which at this point seem less and less defendable, -finally become impossible to justify.

Unfortunately the complete rotating assembly becomes too heavy to produce a strong and consistent motion. Fortunately we are able to produce intermittent rotations in the direction negative to positive. In an effort to get things moving a bit, we vibrated the complete experimental set-up to loosen all the surface contacts between moving parts. It was thus possible to prompt several strong and consistent rotational periods.

Bipolar Trials

When we were finally able to create an experimental set up using two separate polarity high voltage sources which permitted the central feed point to become either positive, negative or grounded between the previous two feed points. This permitted the upper feed point to provide one polarity on the disc, and another polarity on the wire whereas the central or lateral fed metallic shield feed point was grounded. The central Plexiglas separator thus became the isolating bridge between the two high voltage feed points.

The experiments conducted under these operating conditions were still considered authentic . Il appears that we can state unequivocally that the different voltage levels are the only consequential issues at play, thus the propulsive (displacement) is exactly the same in the following three cases:

- High Voltage of 40 kV. Positive on the disc m 49 kV. Negative on wire.

- High Voltage of 80 kV. Positive on the disc, wire being grounded.

- High Voltage of 80 kV. Negative on the wire, disc being grounded

5- Influence produced by a magnetic field (see figure 4)

It could be constituted that the Earth's magnetic field had no particular effect upon the experiment, the horizontal components as such, are being considered as, "having no resulting effects," due to the continued rotations observed, whereas it could be postulated that vertical components may have had some effects.

By creating a solenoid field which largely enveloped the vacuum bell , we managed to produce a resulting magnetic field which varied between -6 and +6 Gauss, which, as it turns out, is approximately 13 times as powerful as the Earth's own vertical magnetic field component.

The solenoid had the following dimensions:

- Diameter= 75 cm

- Useful height= 45cm.

- Number of turns per centimeter=2

- Current intensity=4.5 amps

Under these conditions the magnetic field component was estimated at 6 Gauss and even a bit higher acting upon the trajectory of the system under trial.

The following four experiments were conducted by applying positive high voltage upon the discs.

- Ordinary trial with a consistent rotation of approximately one half turn per second using 80 kV. Positive forwards was observed

- The addition of the grounded solenoid having no current consumption resulted in the same observations as above, -again approximately one half turn per second in the same direction (positive forwards)

- By energizing the solenoid field (which drew 4.5 amps), we observed no appreciable changes in the operation of the system. Of course rotation continued in the same direction.

- Reversing the solenoid field current produced no observable differences, and again the rotation remained in the same direction.

During these trials we had repeatedly turned the external electromagnetic field on and off producing each time the expected 6 Gauss field. Results indicated there was no change whatsoever in the rotational period.

Note: It is reasonable to assume that either the earth's magnetic field or even an artificially created magnetic field had a minimal effect upon the voltage feed points however the intensity of such fields would have been in the order of 6.10^{-5} dynes per centimeter on the conductors themselves, in-as-much as we can accurately constitute, under these conditions.

Annexed section 3.3.4.2

We have studied the rotation speed as a function of the pressure inside the bell jar, while attempting to stabilize a constant DC feed as long as possible.

As previously experienced during other experimental procedures we have come up with the regular array of difficulties caused by the size of the glass bell jar and other unwanted parasitic effects. These minor but persistent difficulties prevented us from documenting consistent rotational speeds. However, we have been able to confirm that under ordinary atmospheric pressures, there is in-fact a superposition of two effects , To wit: $\vec{E}$ and $\vec{P}$ as previously observed in earlier experiments.

AS perceived, when the negative high voltage I routed to the wire and the disc is grounded under vacuum conditions specified at 2.10^{-5} mm Hg, ▲ the system displaces itself **disc forwards (which is to say negative to positive displacement)**.

In one of our earlier experiments we were able to sustain approximately 1 turn per second at a voltage of 40 kV. drawing 2μA. Under such conditions, a precision air intake needle valve was slowly opened. As the atmospheric pressure reached 10^{-3} mm Hg. we witnessed a diminution of the rotating speed until the apparatus came to a complete stop.

Between 10^{-3} mm Hg ▲ and approximately 250mm Hg, ▲ it becomes impossible to keep feeding the 40 kV. due to the fact that the inner environment of the bell jar becomes filled with somewhat more humidity in the air and this results in the appearance of luminous phenomenon. Then, when the air pressure reaches 300 mm Hg. ▲ The high voltage seams again to stabilize, as the apparatus suddenly burst into motion, -this time **wire leading disc (which is to say positive to negative direction)**.

We have verified that the same thing happens when positive high voltage is fed to the disc. The rotational direction is the same as above.

However, in the other two cases where we have witnessed effects of $\vec{E}$ and $\vec{P}$ are in the same direction (which is to say):

- Wire fed by positive high voltage and discs grounded.
- Discs fed negative high voltage and wire grounded.

The system does not reverse its rotational direction as a function of pressure within the bell jar.

This is in complete accordance with the hypothesis $\vec{E} + \vec{P}$ which we established in earlier experiments.

Torr Pressure or millimeter of mercury(mmHg) (to clarify errors)

The atmospheric pressure that supports a column of mercury 1 millimeter high. The unit is named after Italian physicist Evangelista Torricelli for his discovery of the principle of the barometer in 1643. Normal atmospheric pressure can support around 760 mm (29.92 in) of mercury; hence 1/760 of an atmosphere, or 1 mm of mercury (mmHg), has been a convenient measure of pressure for a long time, and is sometimes also called a torr.

End of Section 2D

Annexed Section 3.4

We have mounted the following components on the rotating support structure: Two discs made of Au4 G, with a diameter of 45 mm. and a thickness of 5mm, with a sooth rounded edge. The discs were separated 2 centimeters from each other on the vertical parallel axis. One of the discs was grounded whereas the other was fed with positive high voltage, or subsequently Negative high voltage.

Free air trials

When we supplied high voltage to the disc as they were suspended in free air, the system began rotating:

Positive forwards when we applied positive high voltage.

Negative forwards when we applied negative high voltage.

As with every other phenomenon we have observed with regular atmospheric pressure experiments, we have concluded that the high voltage is pushing in the direction where the field is more intense. In these circumstances the torsion field effect is maximal on the exterior surface of the disc condenser under the influence of high voltage. The rotational speed is very weak, and the flash discharges between discs intervene at approximately 35 kV.

Trials in vaccuo.

In contrast to the above the same apparatus reacts differently while under vacuum conditions. The disc rotates + forwards, regardless which polarity high voltage is applied, and we managed to obtain rotational speeds of one turn per second.

One could suppose that particular circumstances existed between the electrodes and also that the next trials were conducted using a solid dielectric between discs.

Annexed Section 3.5

Trials of a dielectric Plexiglas condenser at regular atmospheric pressure.

This condenser was created using two circular aluminum discs type Au4G with a diameters of 45 mm by 5 mm thickness each, which are separated by a 5mm Plexiglas dielectric (see diagram). The equipment was carefully constructed using smooth and rounded spark resistant feed arms made out of Aluminum AG3 each of which is connected to either High Voltage feed points and ground feed points.

IN ordinary air we determined that:

-Whereas when we connected the negative high voltage upon the disc and grounded the opposite side, the system displaced itself positive forwards.

-Whereas, when the positive high voltage was connected to one side of the disc and the other side was grounded, the system displaced itself Negative forwards.

We can thus conclude that under normal atmospheric conditions, it is the high voltage applied to the disc which pushes the system.

This appears to be the norm since we can assume that that the external plate of the disc (see diagram) is the area most influenced by a large torsion field.

Other results demonstrated in the graph curves 1 through 4 of this annex have shown results similar in nature to the attenuation caused by the bell jar used in the last experiment.

Finally, further trials using the grounded metallic shield yielded the same results as before (see annex 3.3.2).

It is important to note that when the metallic shield is isolated by itself there is no rotation, whereas when the shield is grounded, the apparatus begins to turn, -depending, of course,-upon the polarity assigned as in the aforementioned experimental procedures.

We repeated the very same experiments as above, however this time “in vaccuo” and we determined that the system becomes polarized - in that the apparatus always displaces itself positive forwards regardless of the distribution of high voltage polarities. In other words the displacement is always from negative to positive.

Graph curves 5 and 6 (included in this annex) are showing that the rotational speed if faster with Positive High Voltage than with negative High Voltage. We also noted that the graph points are more dispersed due to the Bell Jar effects, as witnessed previously when the bell jar was used.

Finally let us report experiments whereby the metallic shield was stationary and grounded within the interior of the Bell Jar. In this case, we observed no movement whatsoever. This result does not seem unreasonable, and in fact appears perfectly normal since the shield accumulates fixed charges, which has

a tendency to attenuate the rotation in the same fashion as the Glass Bell Jar had by itself done so in previous experiments.

Annexed Section 3.6

Vacuum trials using parallel discs resembling previously shown experiments except for several differences and added features which could somehow increase the field effects previously witnessed.

1. Using several metal compositions and combinations thereof.

We have tried various mixtures of metallic discs and distribution electrodes or arms either in heterogeneous or homogeneous pairs. The coupling resistance (due primarily by the rolling surface contact) increased along with the weight of different metals used. As normally assumed, heavier metals than Aluminum (such as copper and lead discs) created more difficulties in the displacements primarily due to the increased coupling resistance judged to be between 1.5 to 3 grams per centimeter.

The presence of accumulated charges upon the inner surface of the Bell Jar was the most troublesome distraction and prevented us from recording any consistent meaningful results. Nether-the-less we were able to determine that the metallic composition of the apparatus had no effects upon the direction or speed of the rotation observed, (mass non-withstanding).

2. Possible Field augmenting qualities

Here, we tried various procedures such as different composition of wire conductors varying from tungsten, tantalum, copper and cadmium either pointed or round-ended, non-of–which resulted in any appreciable differences in the measured results.

These last attempts were prompted by a hypothesis originally suggested by Mr. Brown.

To whit:

> If an electrode permits a mass particle m_i from escaping its surface, and such a charge is accelerated and arrives to the other electrode the complete system shall not be submitted to a force.
>
> However (except for cases when the mass particle would miss it's intended target) If m_i manages to change the charge potential where it lands or varies the electric field itself (which is variable in the case of a pointed surface) the forces do not cancel each other out.
>
> As previously stated the system does not rotate faster or slower regardless of the nature of these various miscellaneous and diverse points.
>
> We included a few extra graph curves showing results whereby the attenuation and braking action permitted us to momentarily record various results which were not quantitatively reproducible consistently under the same trial configuration. It would be quite useless to try and compare such results to obtain empirical evidence of any kind.

Annexed Section 4.1

In deed as was formerly established in earlier sections of this report, Mr. Cornillon has put forth the following hypothesis:

> Electrons which are emitted by the cathode are responsible for tearing off miniscule metallic particles away from the anode, and these particles are then attracted back to the cathode. A number of them end up depositing themselves upon the cathode however a few of them miss the cathode. Would it not make sense to assume that those stray metallic particles are responsible for causing the positive-forward displacement?

The hypothesis proposed by Mr. Cornillon had already been contradicted by previous experiments using Plexiglas dielectric condensers (see annex 3.5). We insisted on verifying that the same condition be observed using the disc/wire configuration.

Under other circumstances whereby these trials were conducted under normal atmospheric pressure, we attempted to diminish the displacement effect on the wire disc configuration by isolating the critical components in such a fashion as to prevent the hypothesized effect from occurring.

In an attempt to either verify or disprove the hypothesis, we isolated one half of the disc and the totality of the wire in Plexiglas (see the diagram matrix).

We tried the exact same experiments in vacuum and observed the same results as before, and even though we were troubled by the same difficulties caused by the proximity of the inner surface of the bell jar. We were still able to observe a displacement from a negative to positive direction regardless of the polarities of the high voltage feed points.

We repeated the above experiment in free air and the following observations were witnessed

> - Under the type of distribution parameters whereby positive high voltage is fed upon the wire and the disc is grounded, the experiment displaces itself more often wire-forwards, which is to say; - negative to positive flow, however more often than not, the displacement are reversed.
>
> - In the configuration whereby the negative high voltage is applied to the wire and the disc is grounded, the assembly displaces itself disc forwards, in other words from negative to positive
>
> - In the configuration whereby the negative high voltage is applied on the disc and the wire is grounded, the assembly displaces itself wire forwards, in other words from negative to positive.
>
> Of the preceding four experiments, three of them seem perfectly logical and may easily be defined, justifiably, the first attempt whereby it is known that the apparatus displaces itself disc-forwards.
>
> In reality, the armatures (wire or disc) upon which the high voltage is fed is the area where the field seems strongest, the assembly displaces itself in the configuration from “armature at high potential” to “grounded armature.”

The fourth observation appears to be a flagrant violation of the previous cases and demonstrates a summation of all forces. On top of that the rotation seems to change direction rather easily and these erroneous results might be due to inconsistencies in the curve of the wire which appears much wider when compared to the curvature of the disc, $\vec{E}$, was considerably larger in the first configuration than $\vec{E}$ was in the fourth configuration, and of course the humidity of the air and the resulting ionization, could have countered more or less the force polarity $\vec{P}$.

The Table (Shown Below) is a visual summation which takes all speeds and different rotations as well as intensities of the observations into consideration. These are reduced to separate conditions observed in the four experiments.

We have concluded that the intensity of the field is clearly weaker within the Plexiglas envelop than without the Plexiglas. It appears to us as though the ionization in the first experiment is weaker than in the second experiment. In other tests, it appears that the force seems stronger when the high voltage is fed to the wire and the disc is grounded.

Annexed Section 4.2

We concluded that every time we carried a high voltage upon an important vertical surface the rotation of the system was explained using the well-known electrostatic field torsion phenomena. We then conceived an experiment whereby these vertical surfaces were kept at a minimum. To enable this condition we enclosed two complementary discs in a horizontal surface completely enveloped by Plexiglas (see diagram).

With the ultimate goal of creating an important field on a vertical surface we added one pointed end on the surface of the disc (two points in a secondary case).

We rapidly concluded that there was no purpose in creating a pointed end on the high voltage energized disc, or placing two points - one on the disc, and the other placed on the disc which was grounded.

We did, however, observed certain interesting results when we placed a point on the disc which was grounded.

- In the majority of cases we observed the following results

  - When the disc is charged with a negative high voltage, and the second disc is grounded and has an important point in the vertical plane, the system displaces itself negative to positive (in other words point forwards). The displacement speed augmenting generally as the voltage is raised.

  - When the disc is charged with a positive high voltage and the other disc (which has a point on it) the system displaces itself positive to negative (in other words point-forwards) however this occurs at a precise voltage level, and when the voltage is raised slightly higher the displace stops dead, and further, when the voltage is lowered slightly (1 to 2kV) the system starts to displace itself in the opposite sense, (in other words from negative to positive). This occurs in such a fashion as to prevent us from either stopping the system by augmenting the voltage to a maximum level or due to the electrical discharges suffered during the trials, Try as we might we were unable to reverse the displacement in this configuration.

We plotted the curves **N=f(U)** of the observed phenomenon by raising the voltage until electrical arc discharges were nearly observed (but prevented by spark suppression means), then reducing the voltage and measuring the speed.

During conditions whereby positive high voltages were fed, we were sensibly capable to find a voltage level where the displacement stopped abruptly (this is to say during the forward or upper curvature of **U**, and then in the lower curvature of **U**). In contrast, when negative high voltage was fed, the curves recorded sometimes did or sometimes did not, -depending upon the case, represent an inflection point with a negative tangent.

In other cases, it occurred to us that we were unable to obtain the same curves during increases and decreases; however we deduced that such circumstances occurred immediately after an important

electrical discharge, which we assumed was responsible for transferring an important charge upon the Plexiglas envelope.

Graph curves 1 through 6 included in the portion of the report shows a few examples of such observations.

Again, it seems that we are observing the sum of two effect $\vec{E}$ and $\vec{P}$.

In the case whereby the disc is fed with a negative high voltage, and the other disc is grounded we observes $\vec{E} + \vec{P}$.

In the case whereby the disc is fed with a positive high voltage, and the other disc is grounded we observes $\vec{E} - \vec{P}$.

The general indications portrayed by the curves show a summation of two functions with a resulting curve resembling a third degree *polynome* **U** curve.

When we plotted the sum and differences in the **N=f(U)** curves for two trials, one with Positive High Voltage and the second with Negative high voltage we observed that the half-sums which we identified as $\vec{E}$ is diverging towards a zone whereby an important ionization occurs. Whereas, -the half-differences which we identified as $\vec{P}$ is a curve which begin at the tangent axis of U and converges rapidly.

We note finally that there is a notable field divergence between electrodes. While using the same Plexiglas envelope, we removed the discs and replaced them with fine pointed electrodes (see diagram) we also kept a vertical appendage on the grounded electrode.

This modification produced nothing instructive; however it was a great example of the rotation sense using negative high voltage which we attributed to the migration of charges towards the Plexiglas. The conversion did produce brutal type arcing at 130 kV.

The remaining conclusion would be to be successfully finds the primitive rotational direction. In other words we would have found rotation from negative to positive (see curves no. 7 and 8).

We also wish to point out that such inversion of direction towards negative only occurred in a few rare circumstances. In fact it occurred three or four time over a total sum of over thirty different experimental trials.

Annexed Section 4.3

This system was composed of two discs enclosed in Plexiglas (trials under vacuum)

The two 45 mm discs were 5mm thick which was completely encased in Plexiglas (see diagrams).

One of the discs was fed either positive or negative, and at least in the first experiments, the second disc was grounded. We concluded that the system always turns Positive forwards, no matter what polarity was used. The system begins to turn at about 80kV. By increasing the high voltage we were capable of observing about one (1) turn per second.

Once we were capable of feeding high voltage from below these trials were performed in a un-symmetric bipolar configuration balanced between +and -.

In all cases, we were plagued with difficulties caused by the use of the glass bell jar, which seems only controllable by playing with the high voltage levels.

We also noted that this system has about the same effectiveness as the previously described Condensers which were described in Annexed Section 3.5, however the systems are quite different from each other, and in particular the capacity of the electrical charge is very much inferior. Also the field in between electrodes is larger, taking the smooth outer edge of the disc into consideration.

Annexed Section 4.5

The apparatus responsible for supporting the rotational structure consisted of a vertical columns sitting on a set of ball-bearing fixture and supported at the upper and lower extremities by isolated toroidal armatures capable of receiving either positive or negative high voltages (see assembly diagrams).

The system under trial consisted of two plates completely enclosed in Plexiglas in such a fashion as to cause the electric field be kept at a minimum on the exterior portion of the Plexiglas.

The voltage feeds are fed through Plexiglas isolation bushings which are glued to the upper and lower support plates. This give plenty of room for the disruptive electrical discharges to display themselves during high voltages only (we can reach nearly 180 kV using this system.)

Again in these trials we have observed observes the effects of a sum of $\vec{E} + \vec{P}$, sometimes we observe that humidity in the ambient air does not permit the electric charges to stay on the Plexiglas, and that the direction of rotation remains the same despite a reversal in polarity and the only distinguishing difference is an increase in rotational speed.

However , most of the time when we inverse the polarities and that the surrounding ambient air is dry, we witness a change in rotation.

It has happened in a few isolated favorable circumstances that the disturbance in voltage level (say from +80 kV to -80 kV, and at +50 kV and -110 kV), we observed no changes in the rotational speed.

The rotating apparatus appears to have an important friction limit, and the rotation begins once the device has been fed around +75 kV. and -75 kV, which prevents us from plotting satisfactory curve data.

Finally we have tried different trials using the same system however this time we incorporate a feed arm paralleled quadrature structure using Barium Titanate (TB 6000 CSF). We discovered that in the vast majority of cases the Titanate tends to bring about the rotating force at a bit lower voltages, In other cases we remarked that under various ambient air humidity normal test results failed to appear, however when we added more Titanate blocks we observed a polarized movement.

It appears by all indications that these results were directly related to the capacity for the Titanate to retain its charges.

Annexed Section 5

The present annexed section takes into consideration various experiments which were conducted during the 5th period (from December 1956 through to the finale date of this report).

The experiments were conceived and conducted by Messieurs Besson and Jouguet.

The apparatus were tested in vacuum and in bi-polar mode (see Schematic 1). These trials present us with two essential characteristics in contrast to the previous experiments:

- To simplify the electric circuit as much as possible

- To minimize the exterior local field effects as much as possible

This is achieved by shaping a disc condenser with rounded edges. The voltage feed points are placed reasonably centered to the spherical diameter of the center of the two discs. The condenser itself is completely enclosed in a potted resin insulation type material which was casted in such a fashion as to avoid air bubbles within the insulated encapsulation resin.

There were two armatures welded directly to the condenser and these were also encased in the insulator material. Furthermore, the conducting voltage feed arms were themselves encased in the same insulation material and connected to the toroidal feed-thru isolators located a small distance to the right of the center of the sphere and again a small distance to the left of center. This allowed us to orient the spherical assembly around a vertical axis, and to maneuver the faces of the disc in either a perpendicular or a tangential axis of the trajectory of the moving assembly.

The median surface of the dielectric passes through the rotational axis, and we have observed two of these spheres rotate under a vacuum of 5.10^{-5}mm Hg.

We obtained and measured results in the order of 3 turns per second, as observed, the apparatus was suspended on the "merry-go-round" fixture used in previous experiments.

The rotation we observed was attenuated and eventually halted by gather static charges located on the inner surface of the glass bell-jar.

During extremely dry atmospheric conditions using a very clean bell jar we were able to document a very slow rotation of a single spherical assembly connected to a counter-weight (see Schematic 2).

In an effort to reduce the surface field charges we decided to use Polystyrene as a molding agent ($\sum$=2.4) rather than using "Araldite" ($\sum$=5 to 7).

This time we observed that the slowing down (or braking action) caused by the bell-jar was considerably less and this allowed us to obtain very good rotations in the system using a counter-weight.

These successive trials using either Araldite or polystyrene were conducted in both mono-polar and bipolar configuration.

In all cases we observed motion in directions which were guided by the distribution of the polarities however in all cases the motion was observed from negative to positive.

Although we had introduced a certain amount of dissymmetry by using different structures welded on the armatures, we were able to ascertain that these various structures and their permutations and orientations had absolutely no effects on the experimental results observed by the phenomena.

The final position observed at the conclusion of the rotation was completely arbitrary with respects to the positional cardinal points.

In other tests, when we rotated the complete assembly such that the rotational axis was no longer perpendicular, and became tangential to the trajectory we observed an immediate halt in movement regardless of the voltage values or the distribution of polarities (Figures 3 and 4).

Unfortunately, all of these apparatus were rather heavy, and the friction levels were much higher. This is the primary reason that results were only document during elevated voltage levels (in the order of +65 and -65 kV). When we attempted to push the voltage level even higher we observed arcing within the condenser itself as well as, inside the longer Plexiglas encased feed arms of the apparatus which were positioned between the toroidal isolators.

This is the primary reason we were unable to trace curves according to experimental results.

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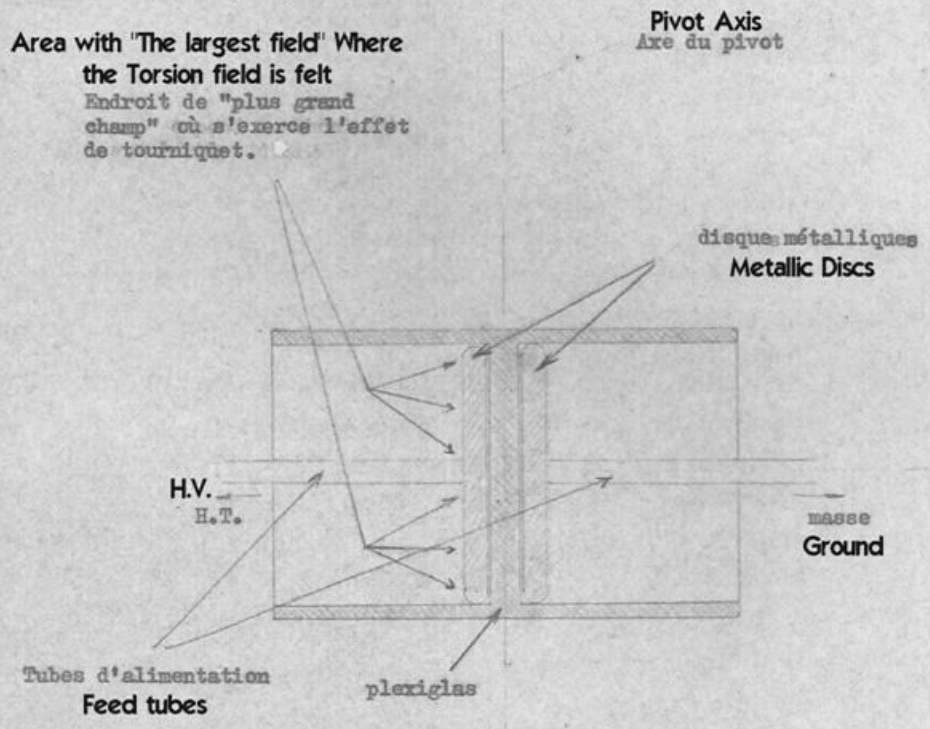
ANNEXE 3.5-


Area with 'The largest field' Where the Torsion field is felt
Endroit de "plus grand champ" où s'exerce l'effet de tourniquet.
Pivot Axis
Axe du pivot
disque métalliques
Metallic Discs
H.V.
H.T.
masse
Ground
Tubes d'alimentation
Feed tubes
plexiglas

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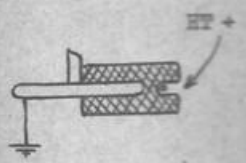
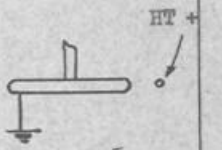
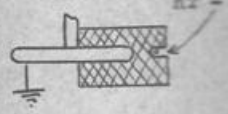
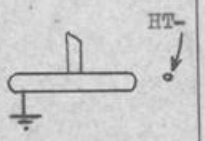
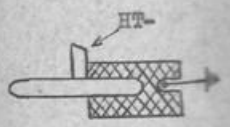
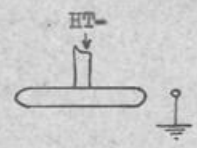
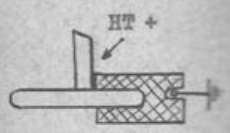
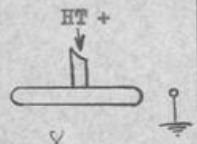
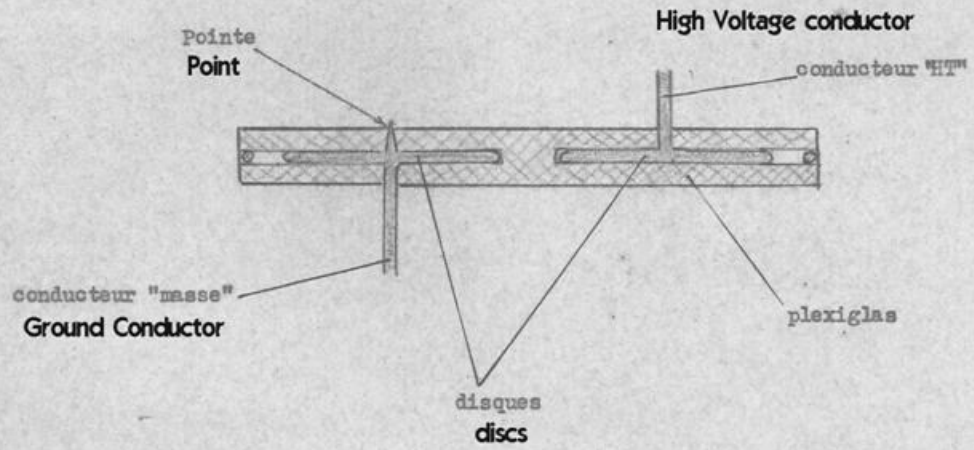
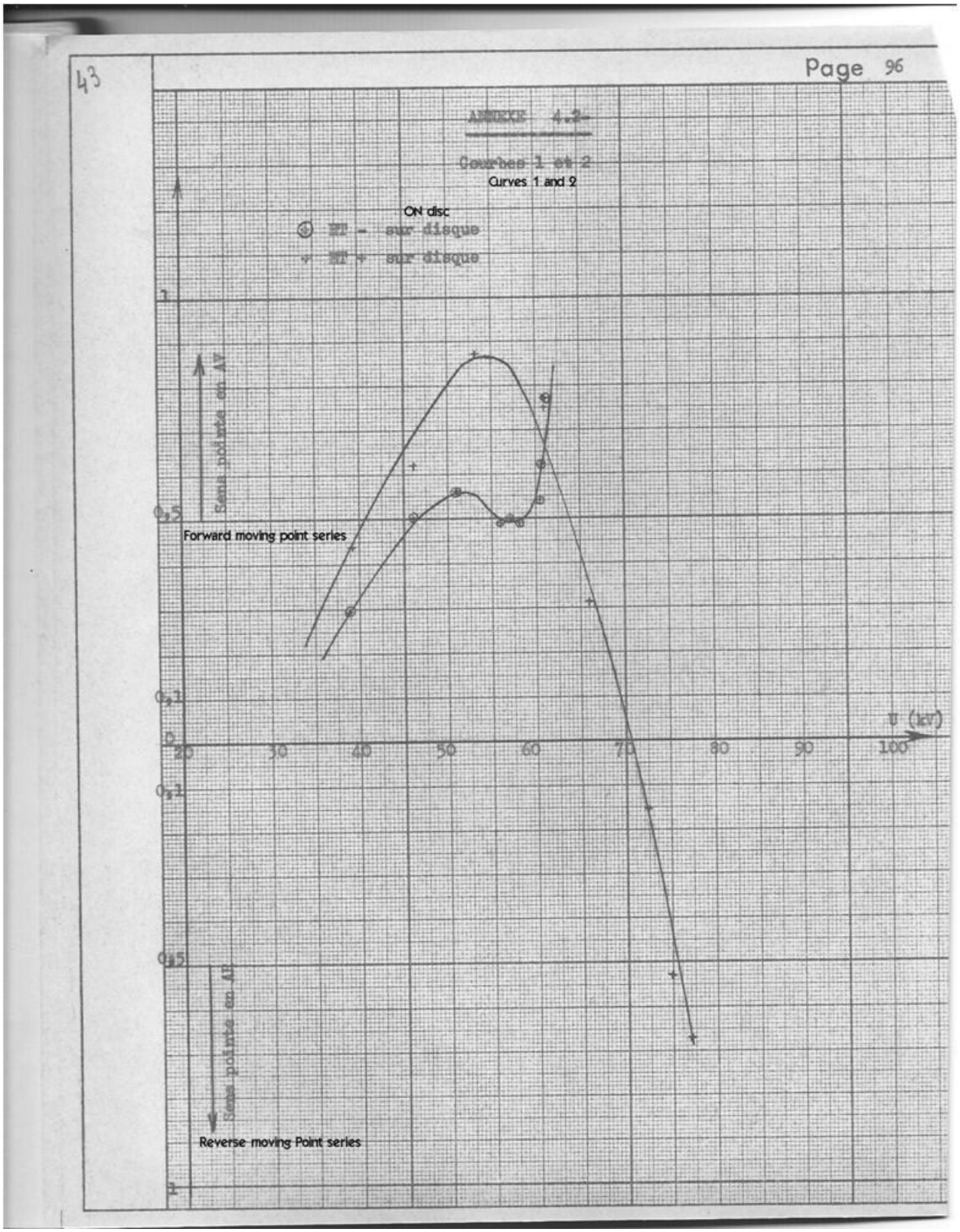
ANNEXE 4.1-

with dielectric plexiglas — Avec diélectrique plexiglas					without Dielectric — Sans diélectrique				
Configuration	U kV	I m A	Dir.	N t/s	Configuration	U kV	I m A	Dir.	N t/s
 1	70	150	⇄	?	 5	30	270	→	2,5
 2	70	190	←	2	 6	30	190	→	3
 3	70	150	→	1,1	 7	30	120	→	1,2
 4	70	400	←	1,4	 8	30	100	→	1,4

ANNEXE 4.2-


Pointe
Point
High Voltage conductor
conducteur "HT"
conducteur "masse"
Ground Conductor
plexiglas
disques
discs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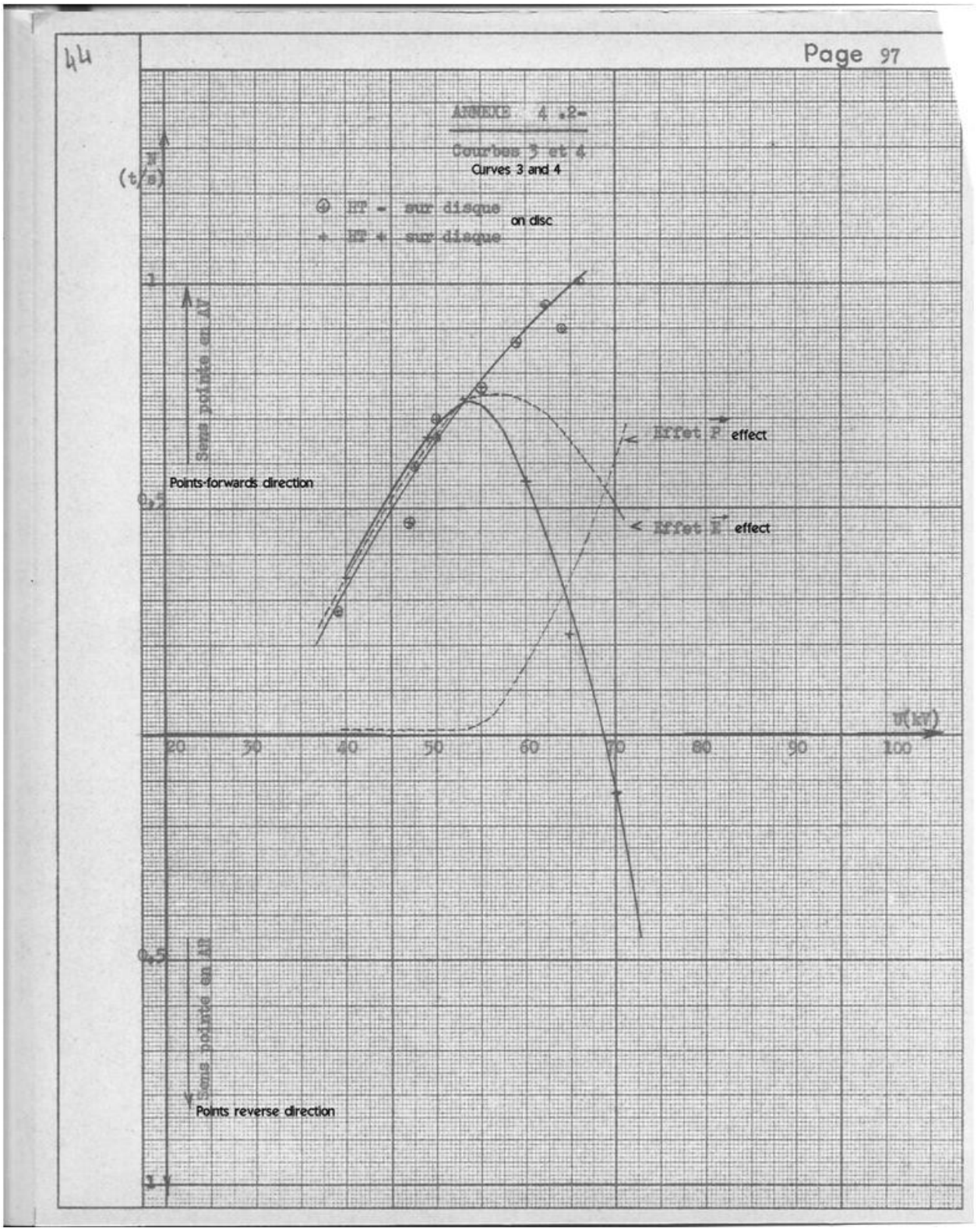
Page 96
ANNEXE 4.3-
Courbes 1 et 2
Curves 1 and 2
ON disc
Sens pointe en AV
Forward moving point series
V (kV)
20
30
40
50
60
70
80
90
100
Sens pointe en AR
Reverse moving Point series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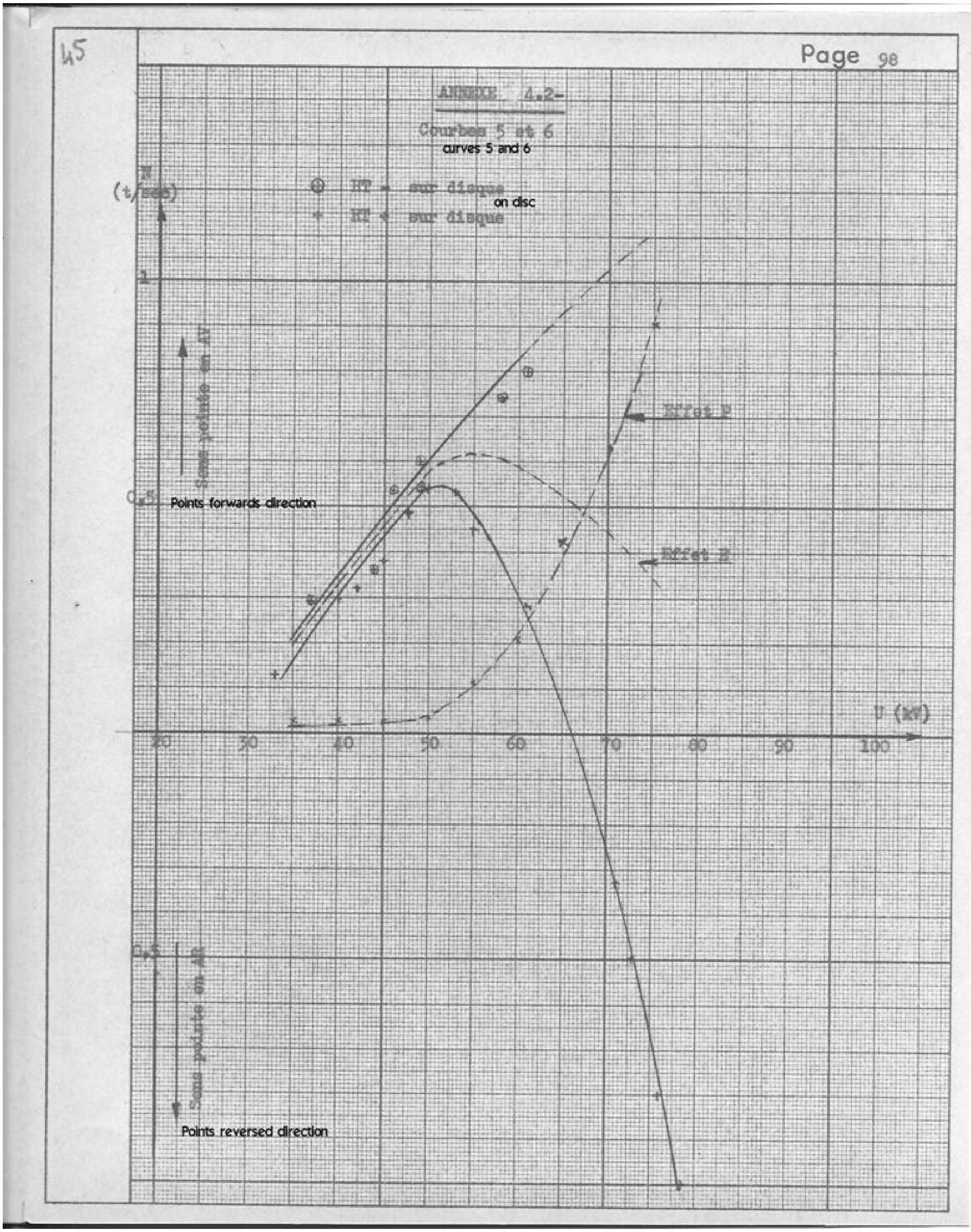
ANNEXE 4 .2-
Courbes 3 et 4
Curves 3 and 4
T (t/m)
⊕ HT - sur disque
on disc
+ HT + sur disque
Sens pointe en AV
Points-forwards direction
Effet P effect
Effet T effect
n(km)
20
30
40
50
60
70
80
90
100
0,5
0,5
Sens pointe en AR
Points reverse direction
1


45
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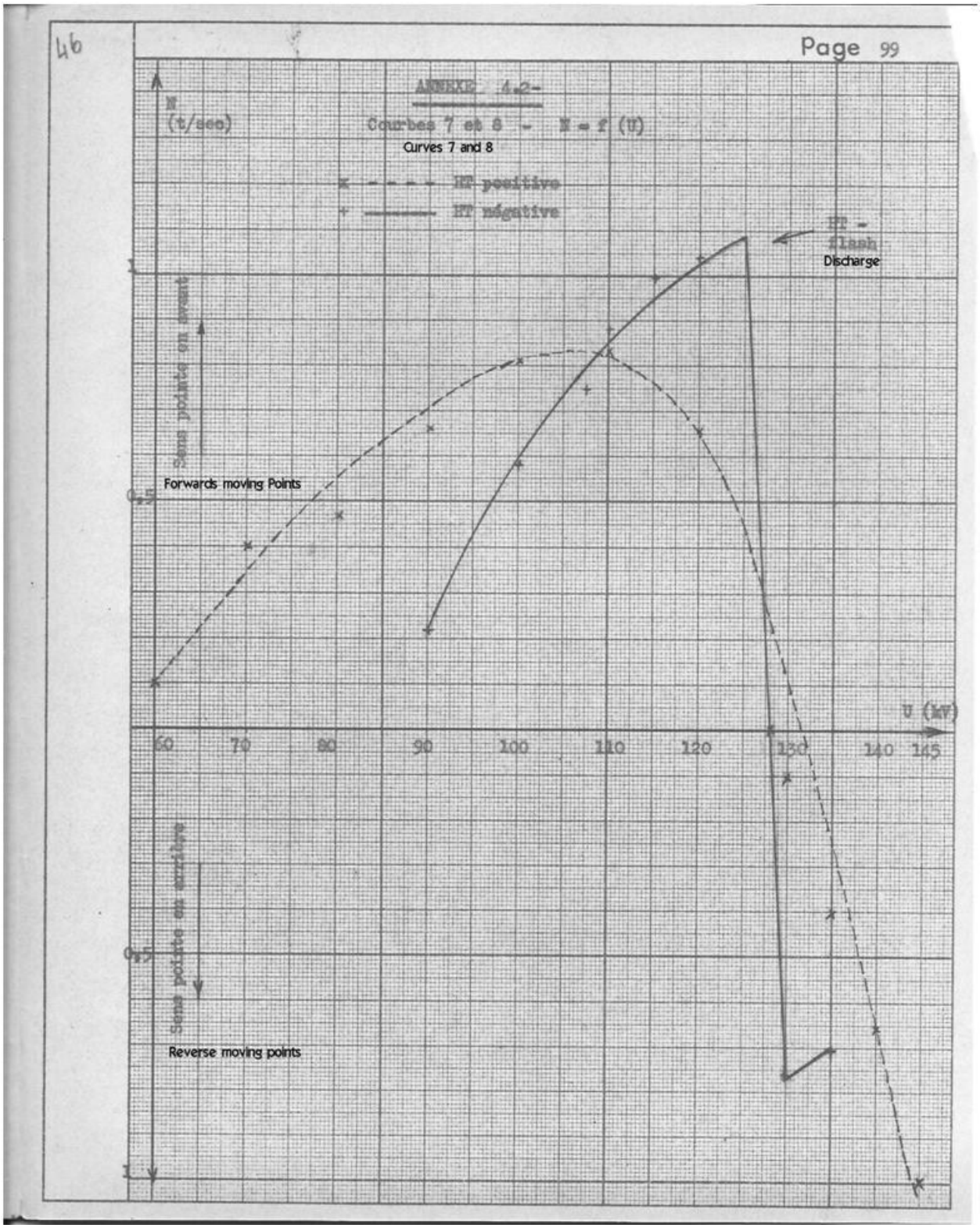
ANNEXE 4.2-
Courbes 5 et 6
curves 5 and 6
N (t/sec)
⊕ HT - sur disque
on disc
+ HT + sur disque
1
Sens pointe en AV
0,5
Points forwards direction
Effet P
Effet B
U (kV)
20
30
40
50
60
70
80
90
100
0,5
Sens pointe en AR
Points reversed direction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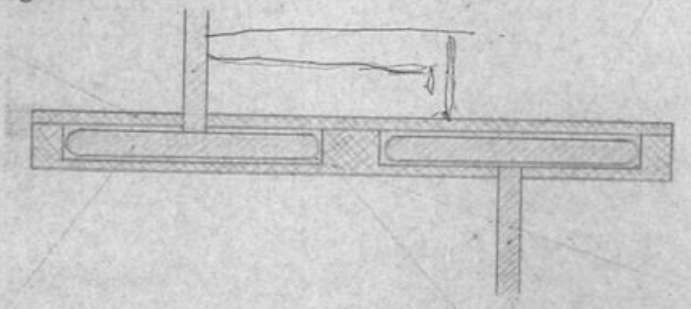
ANNEXE 4.2-
N (t/sec)
Courbes 7 et 8 - N = f (U)
Curves 7 and 8
x - - - - HT positive
+ ——— HT négative
HT - flash
Discharge
Sens pointe en avant
Forwards moving Points
Sens pointe en arrière
Reverse moving points
U (kV)
50
70
80
90
100
110
120
130
140
145
0,5
0,5
1
1

47

ANNEXE 4.3-

Cover made of plexiglas glued together
couvercle en plexiglas collé

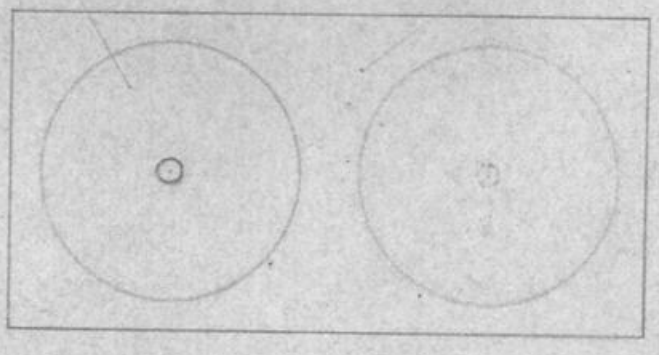
conducteurs
Conductors



logement fraisé pour les disques
Milled Cavity to hold discs

disques métalliques
Metallic discs

plexiglas



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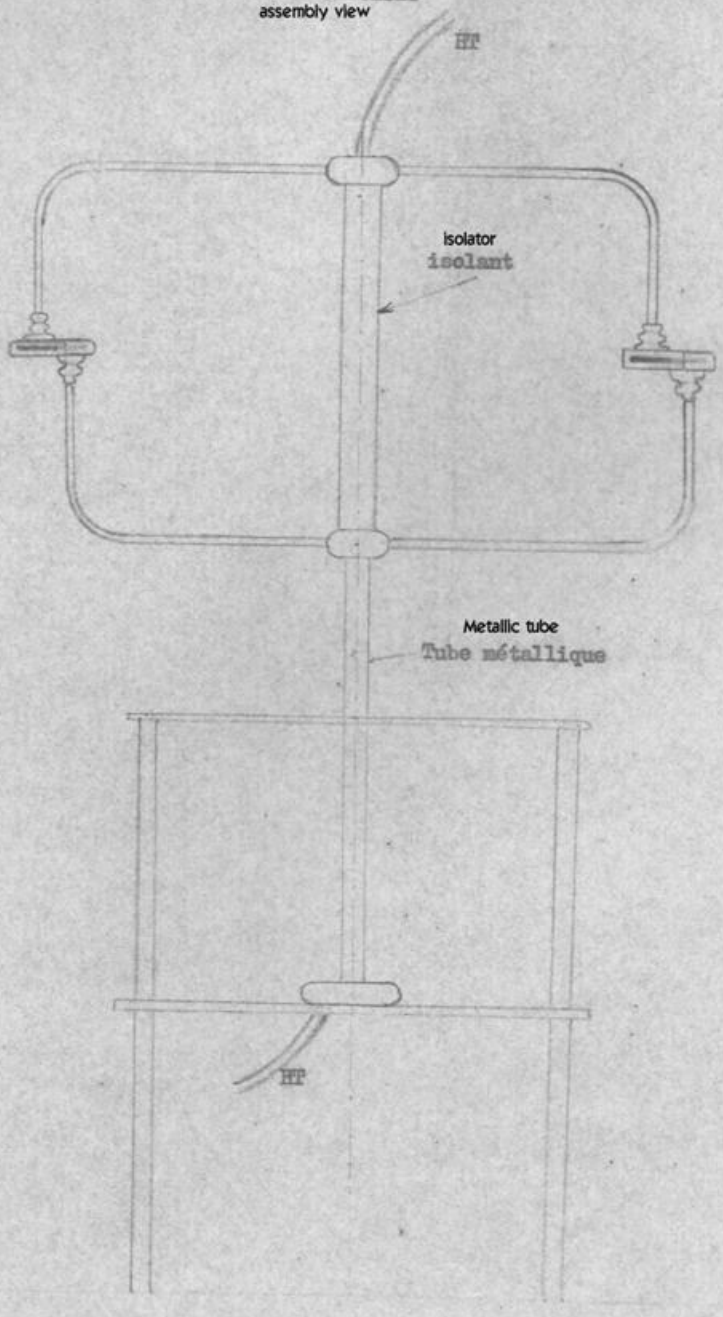
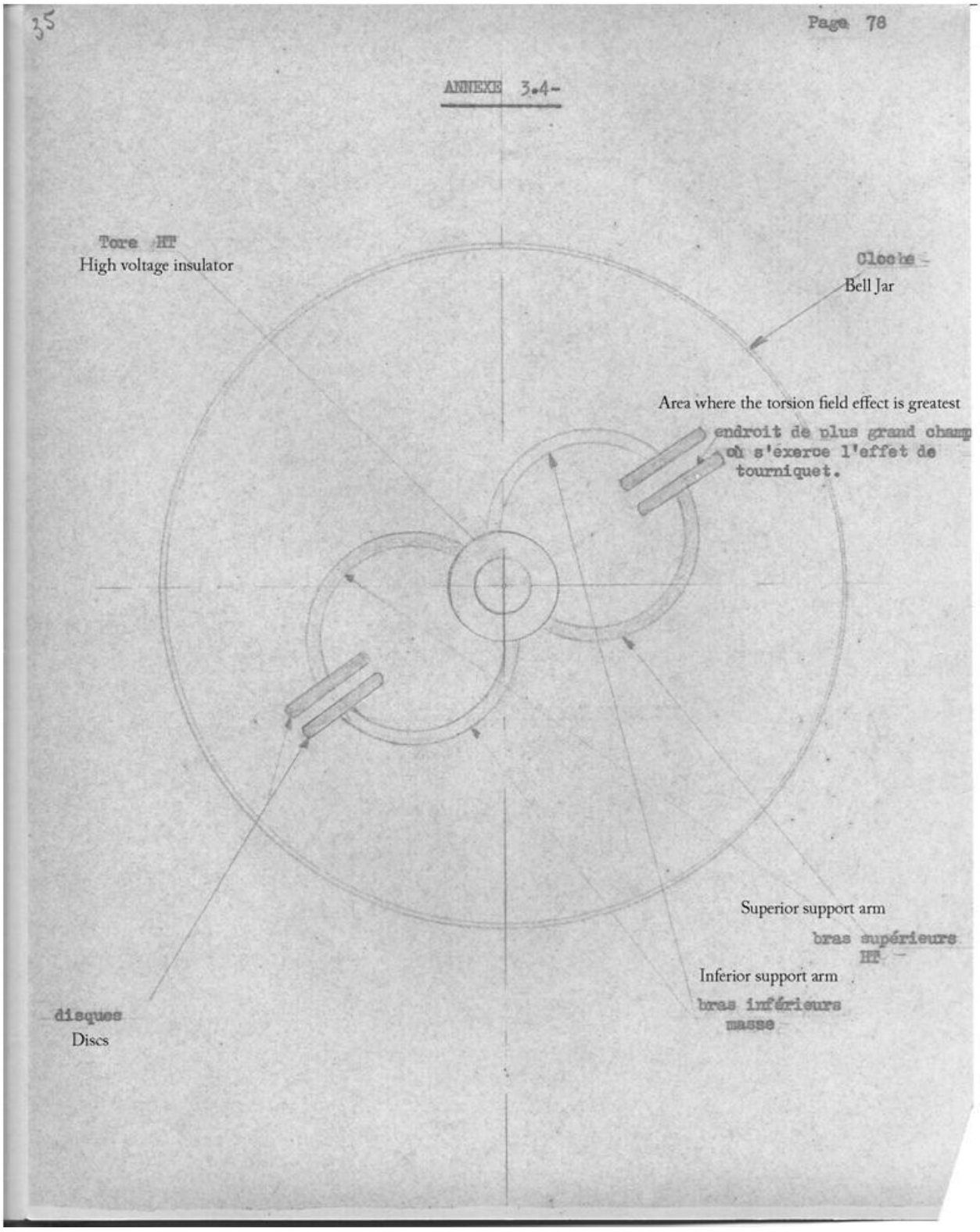
ANNEXE 4.5-

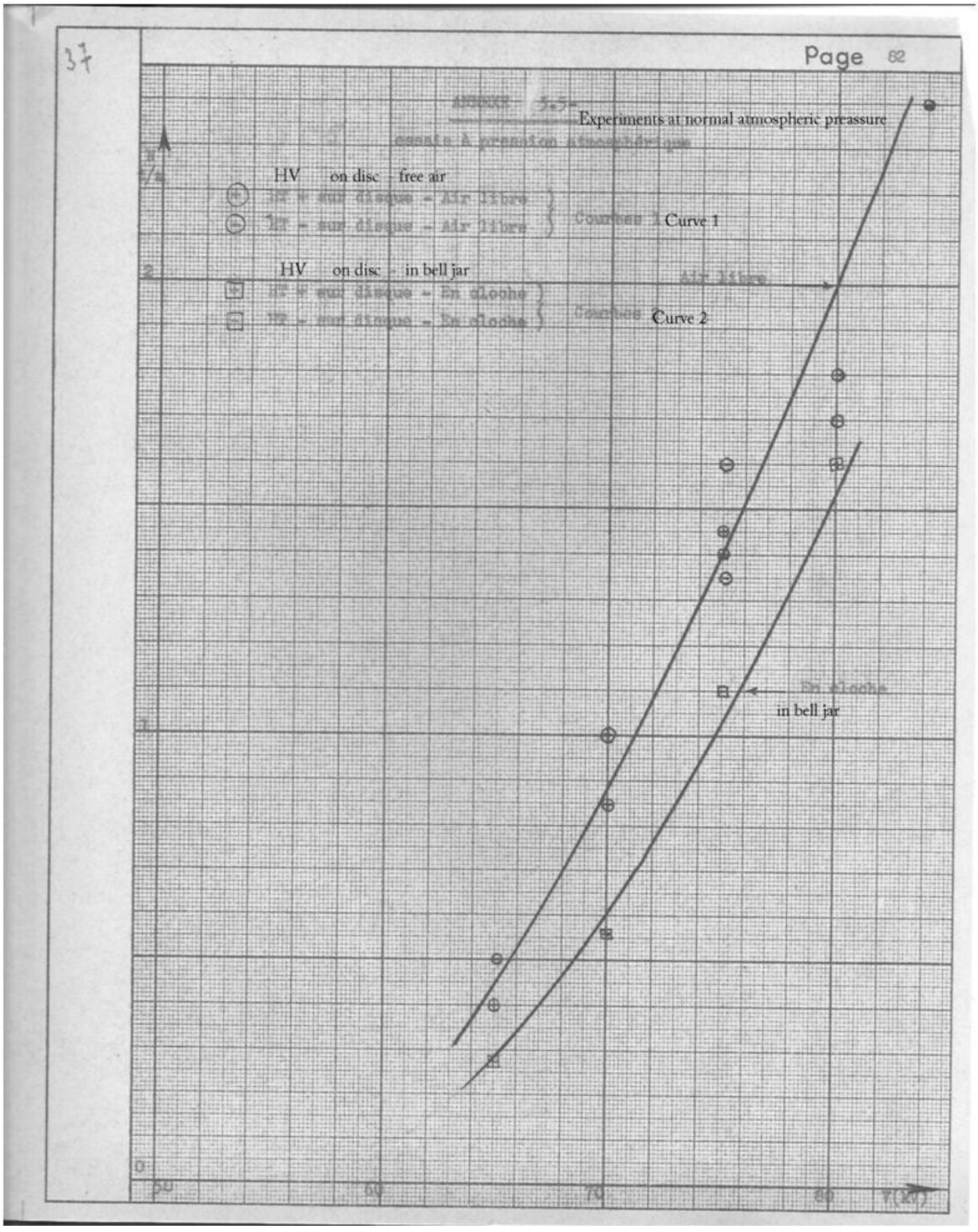
Vue d'ensemble
assembly view

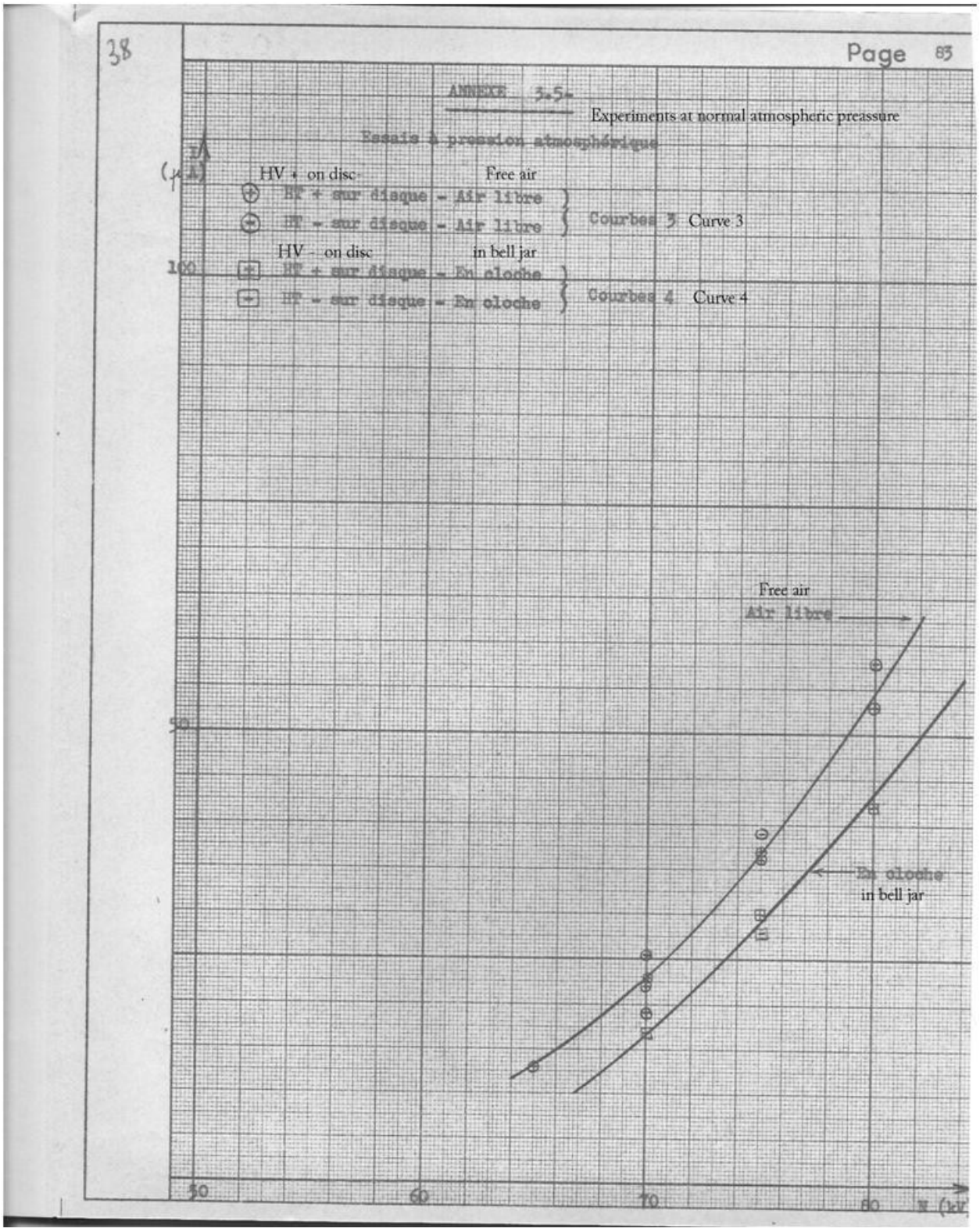


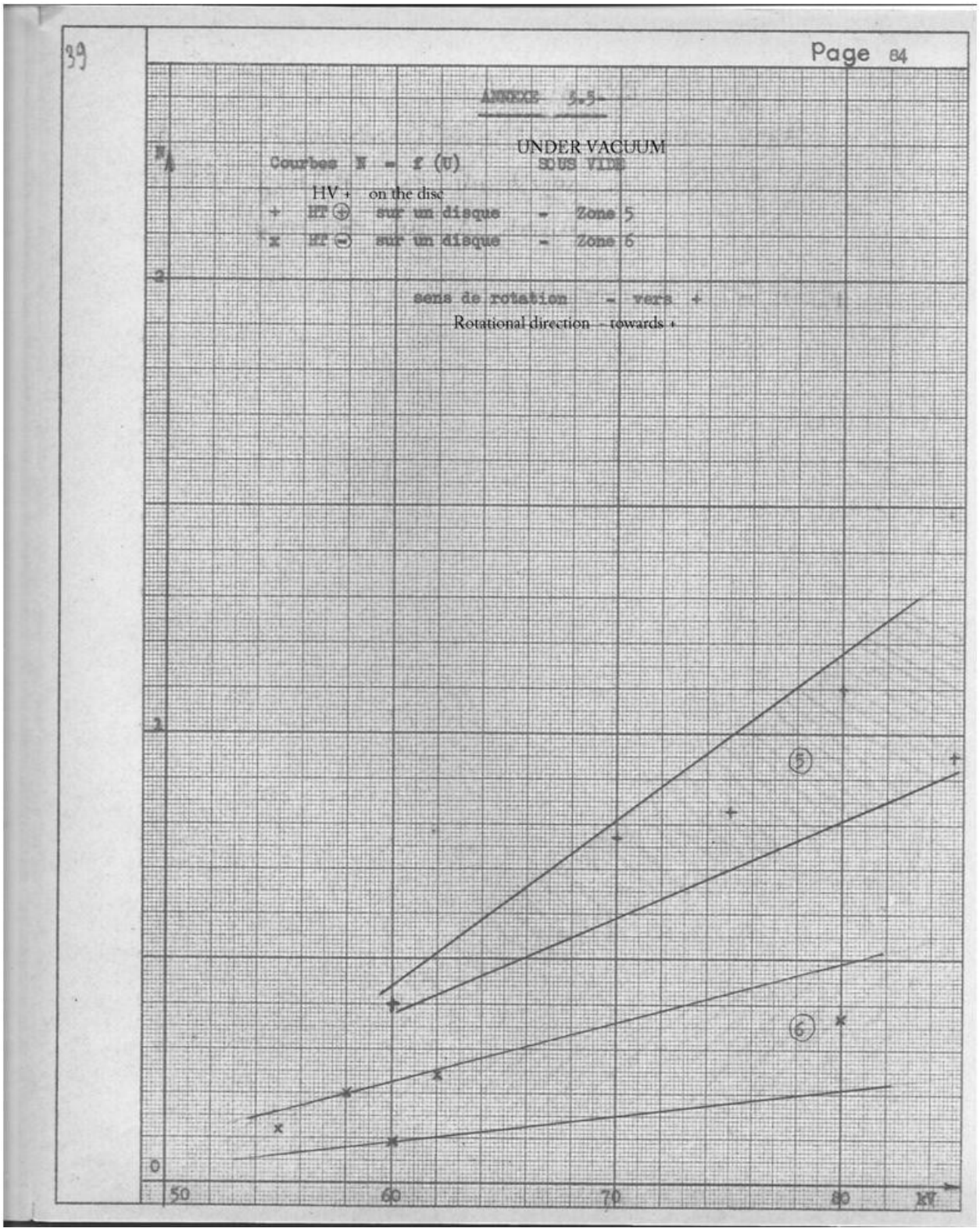
35

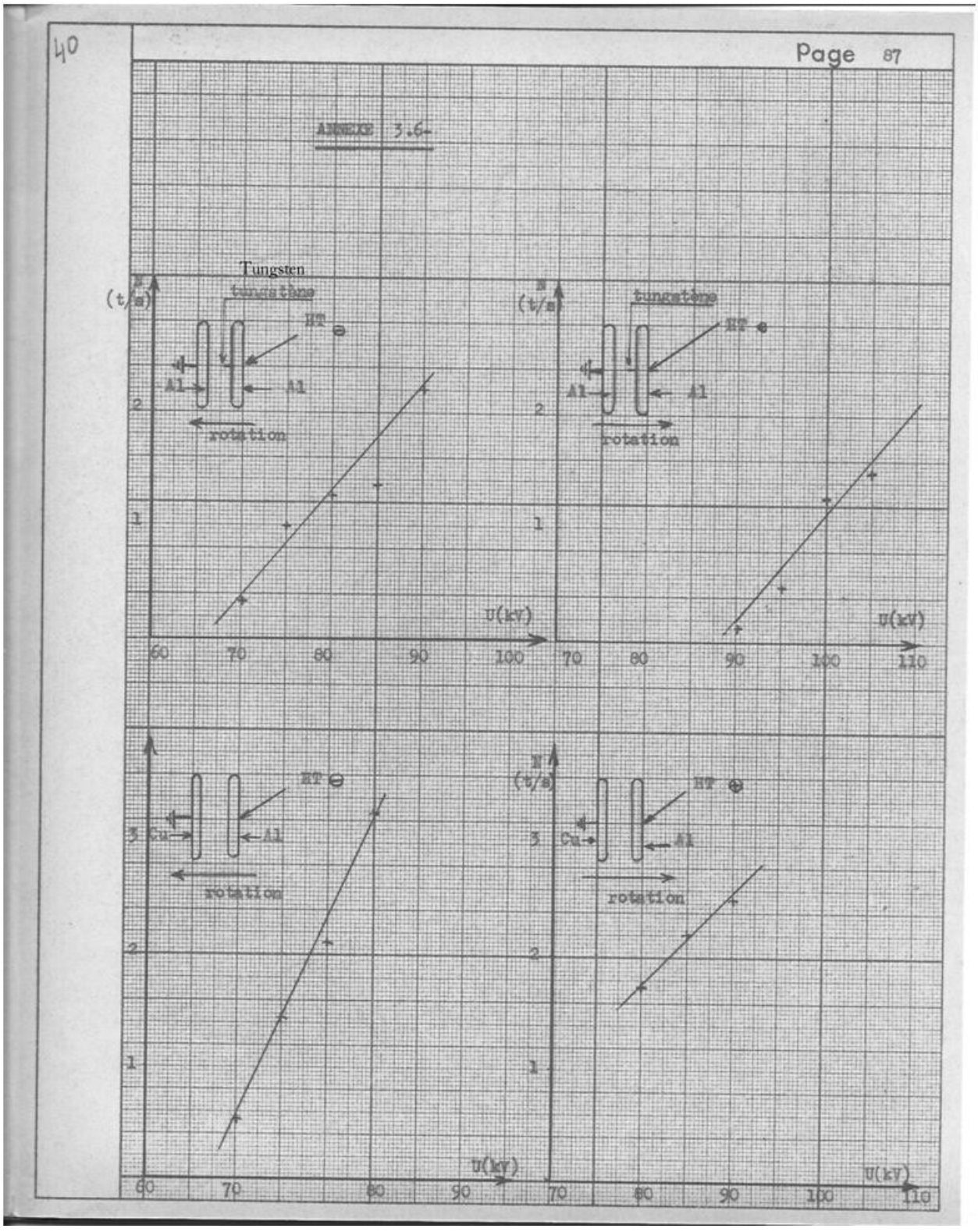
ANNEXE 3.4-

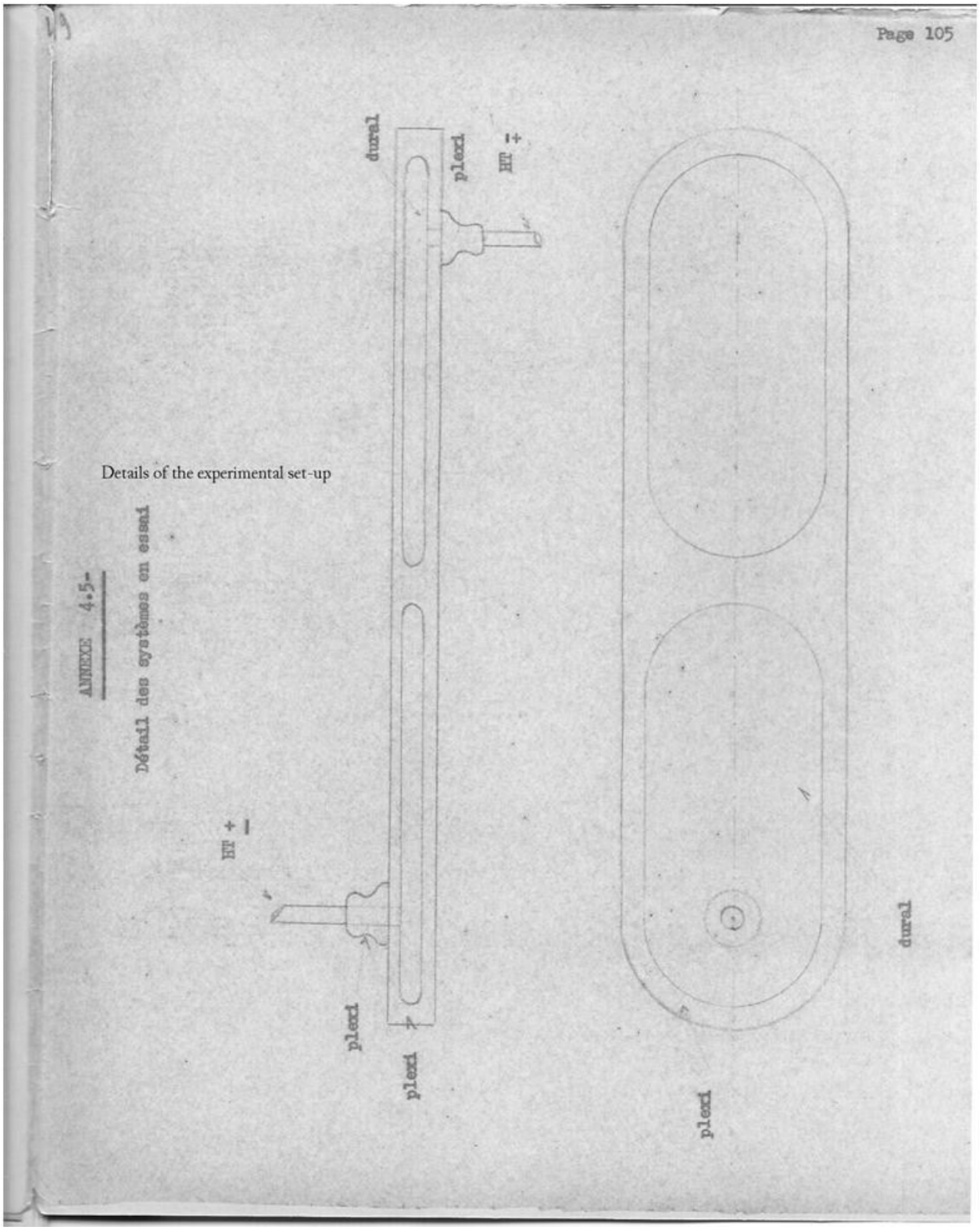

Tore HT
High voltage insulator
Cloche
Bell Jar
Area where the torsion field effect is greatest
endroit de plus grand champ où s'exerce l'effet de tourniquet.
Superior support arm
bras supérieurs HT
Inferior support arm
bras inférieurs masse
disques
Discs


Page 82
Experiments at normal atmospheric preassure
HV on disc free air
Curve 1
HV on disc in bell jar
Curve 2
in bell jar
60
70
80
V(kV)


38
Page 83
ANNEXE 3.5.
Experiments at normal atmospheric preassure
Essais à pression atmosphérique
HV + on disc
Free air
HT + sur disque - Air libre
Courbes 3 Curve 3
HV - on disc
in bell jar
HT - sur disque - En cloche
Courbes 4 Curve 4
100
50
Free air
Air libre
En cloche
in bell jar
50
60
70
80


39
Page 84
ANNEXE 5.5-
UNDER VACUUM
Courbes N = f (U) SOUS VIDE
HV + on the disc
+ HT ⊕ sur un disque - Zone 5
x HT ⊖ sur un disque - Zone 6
sens de rotation - vers +
Rotational direction - towards +
N
2
2
0
5
6
50
60
70
80
KV


40
Page 87
ANNEXE 3.6
Tungsten
tungstène
HT ⊖
Al
Al
rotation
(t/s)
U(kV)
60
70
80
90
100
tungstène
HT ⊕
Al
Al
rotation
(t/s)
U(kV)
70
80
90
100
110
HT ⊖
Cu
Al
rotation
(t/s)
U(kV)
60
70
80
90
HT ⊕
Cu
Al
rotation
(t/s)
U(kV)
70
80
90
100
110


Page 105
ANNEXE 4.5-
Détail des systèmes en essai
Details of the experimental set-up
dural
plexi
HT +
HT -
plexi
plexi
plexi
dural

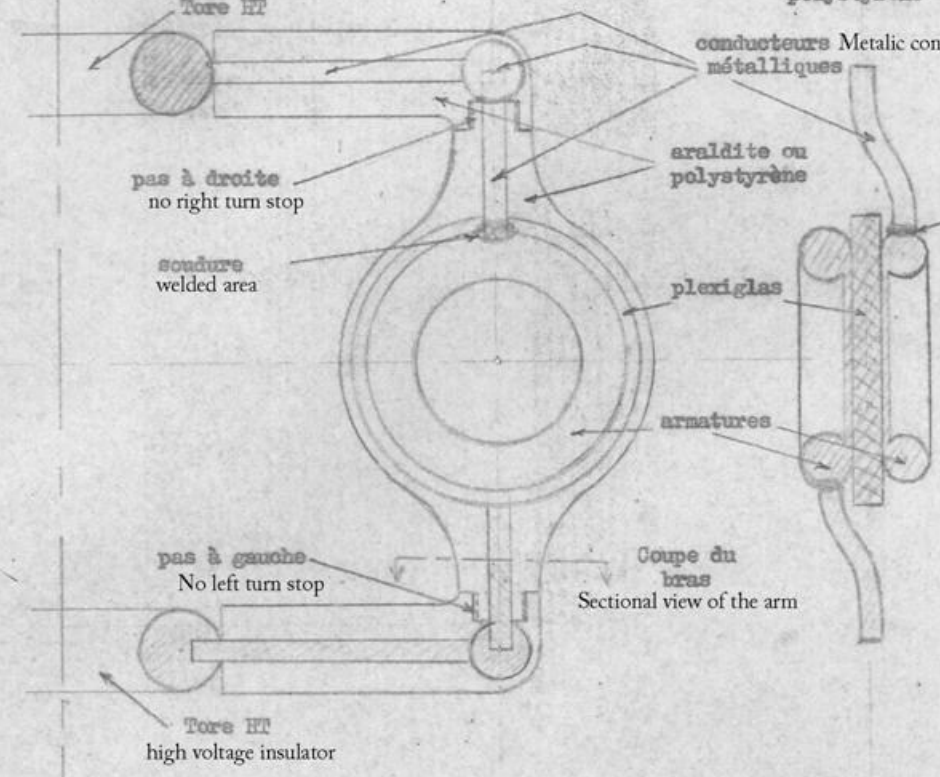
50

Page 109

Figure 1

Sectional diagram of the interior of the Aradite or Polystyrene sphere

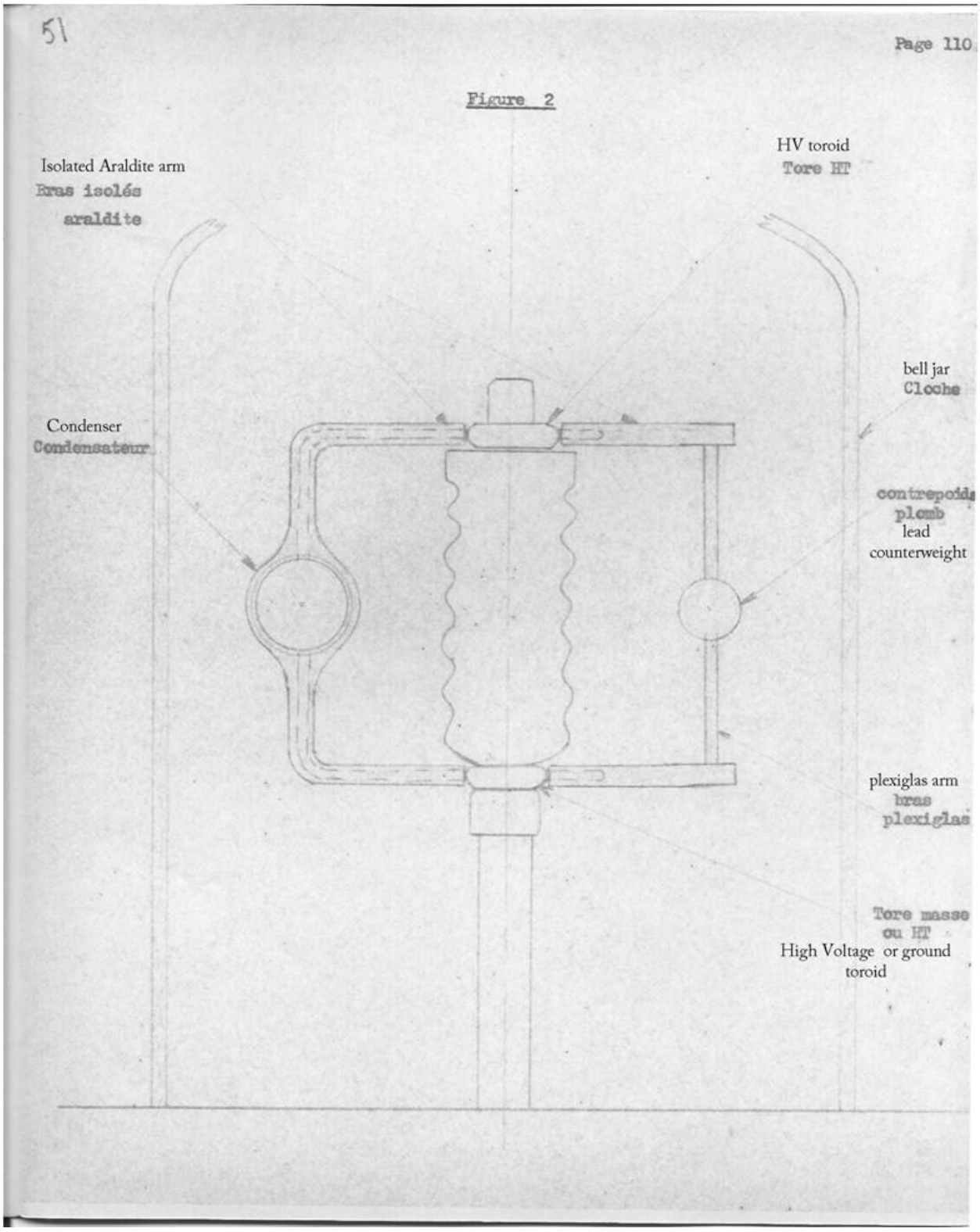
Coupe du condensateur intérieur à la sphère d'araldite ou de polystyrène



Echelle 1/1
Scale 1:1

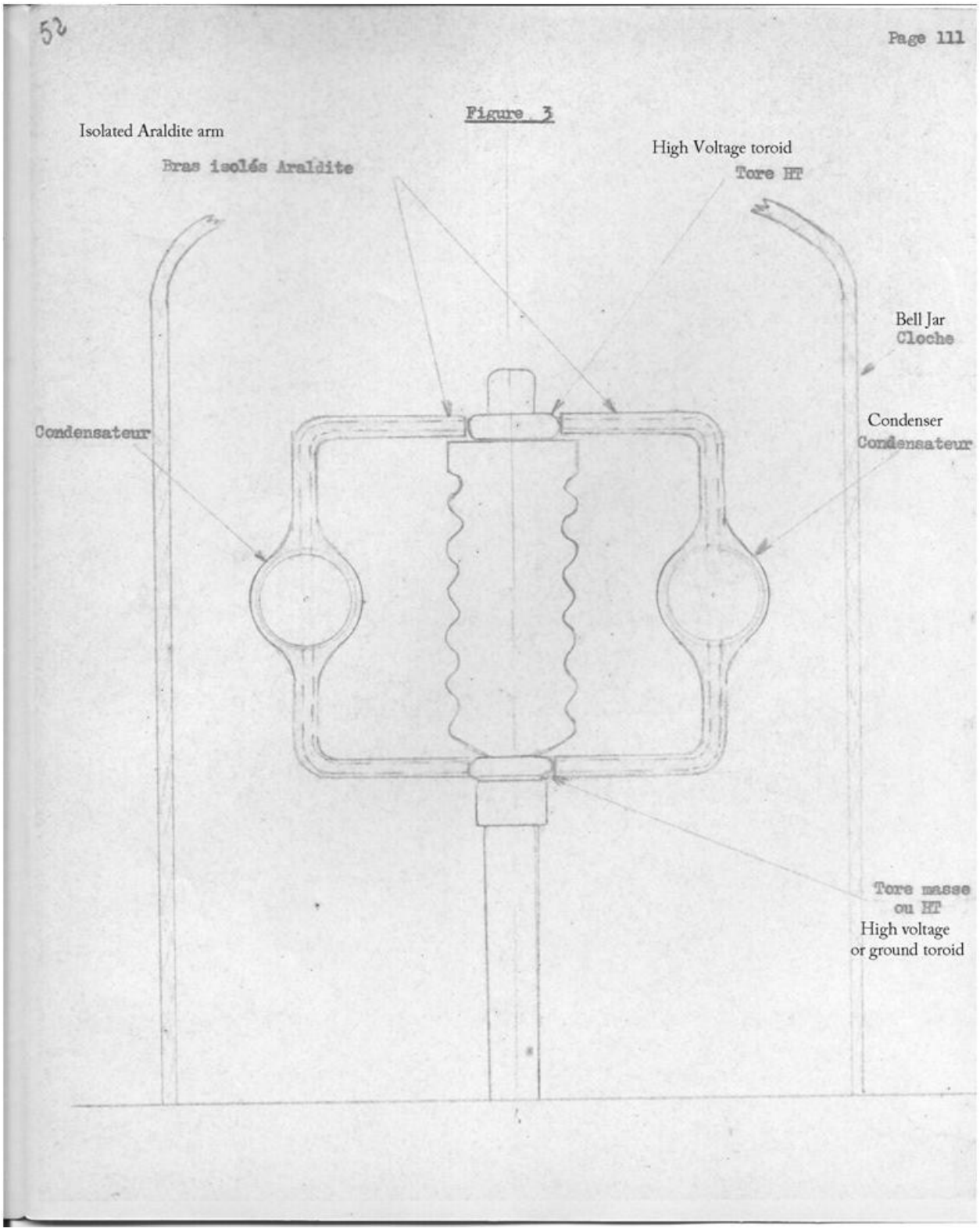
51

Figure 2


Isolated Araldite arm
Bras isolés
araldite
HV toroid
Tore HT
bell jar
Cloche
Condenser
Condensateur
contrepoids
plomb
lead
counterweight
plexiglas arm
bras
plexiglas
Tore masse
ou HT
High Voltage or ground
toroid

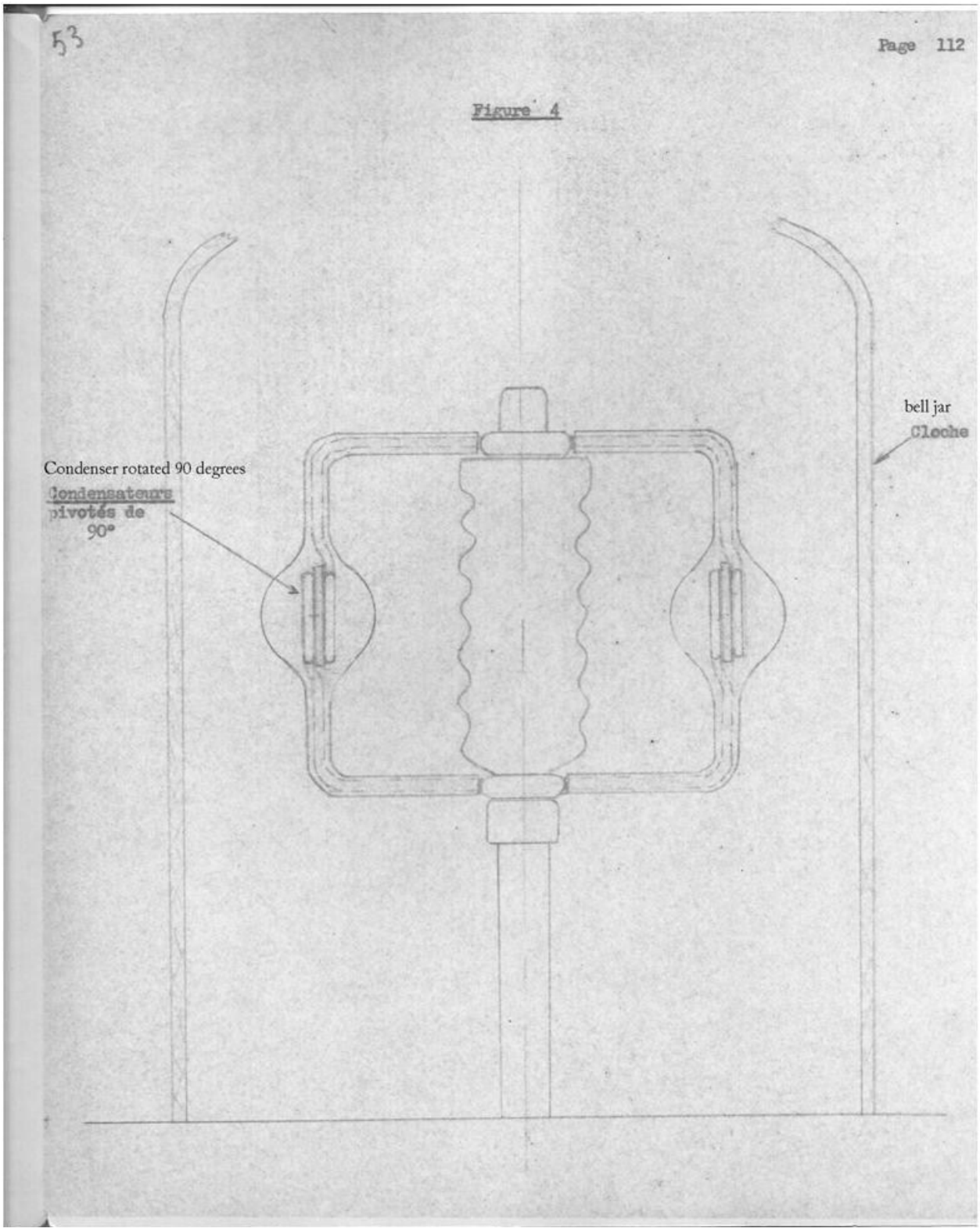
52

Figure 3


Isolated Araldite arm
Bras isolés Araldite
High Voltage toroid
Tore HT
Bell Jar
Cloche
Condensateur
Condenser
Condensateur
Tore masse
ou HT
High voltage
or ground toroid

53

Figure 4


bell jar
Cloche
Condenser rotated 90 degrees
Condensateurs
pivotés de
90°

Project Montgolfier Final Report

Market CASDN 9/58 of 5/7/1958

COURBEVOIE, the 15th of April 1959

Serial number 2

Objective

To study an unexplained Natural Phenomena

This Phase of the study which is documented in this report is to attempt to quantify observations originally recorded in the Montgolfier report of 1/7/1957.

The experiments in question have all been performed in a Vacuum chamber specially designed to person these tests, and a description of the modules and components follow;

Description of the Vacuume Chamber

A - DESCRIPTION DE L'APPAREILLAGE d'ESSAI SOUS VIDE

Tub-plate assembly

I - ENSEMBLE PLATINE-CUVE

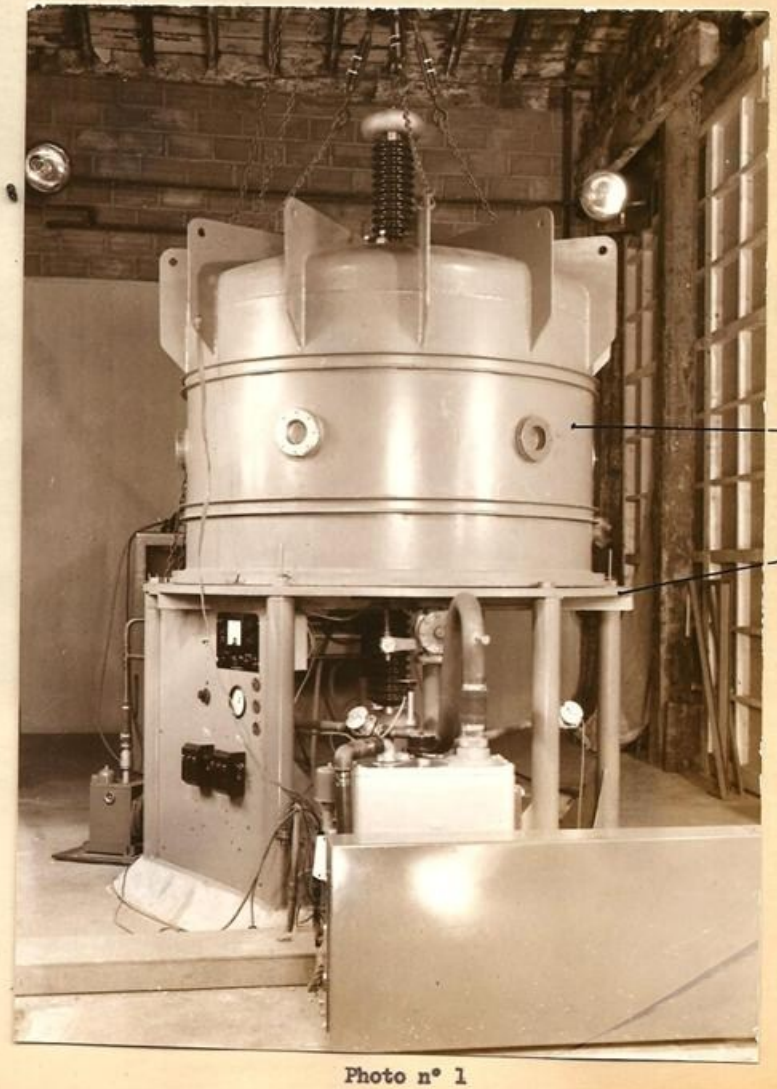


Photo n° 1

Characteristics of the Plate Unit

I.1 - Caractéristiques de la platine

Photo n° 2

Diameter
- Diamètre 1800 mm.

Thickness
- Epaisseur 30 mm.

This plate contains, starting from the center (photo number 2)

- A porthole in the exact center of a diameter of 100mm. which permits high voltages to be fed from the exterior

- Four (4) each holes with a diameter of 303 mm which are evenly distributed around a circumference of a diameter of 1160 mm. This permits the usage of a baffle which is unaffected by the placement of an "EDWARDS" type 903.B pump.

- Six (6) each holes with a diameter of 36 mm., evenly distributed around a circumference of a diameter of 1700mm. These holes permit the fixation of the plate upon a support made up of thick pipes which are in place to support the complete assembly off the floor ground plane.

-Three (3) thick guidance washers distributed in the center of three fixed footing pipes. These enable the even descent of the upper Tub assembly The centering of the Tub holes are assured further by three cone shaped fixation washers. We can see these because they are distributed 120 degrees apart from each other on the stepped-down surface of the plate.

On the left side of (photo number 2) there are two (2) each centering washers are seen with two (2) bolts are used to fasten a hoisting mechanism which holds the bell jar above the plate during experimental set-ups.

Details of the bell jar and surface plate mating

I.2 - Caractéristiques de la cuve

Cuve en appui sur la platine

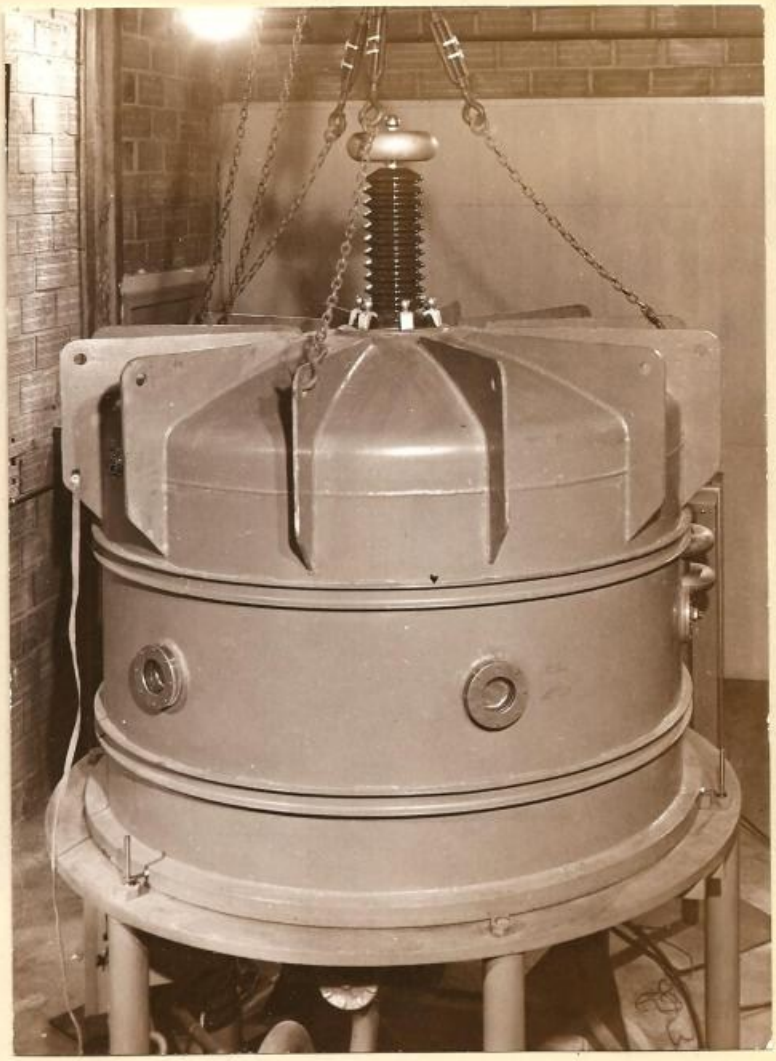


Photo n° 3

On voit, dans le haut et au centre, la traversée supérieure de haute tension avec son tore d'arrivée de courant.

.../

We see the high voltage entry port in the upper center which is crowned by a toroid.

Vue intérieure de la cuve

Interior view of the tub

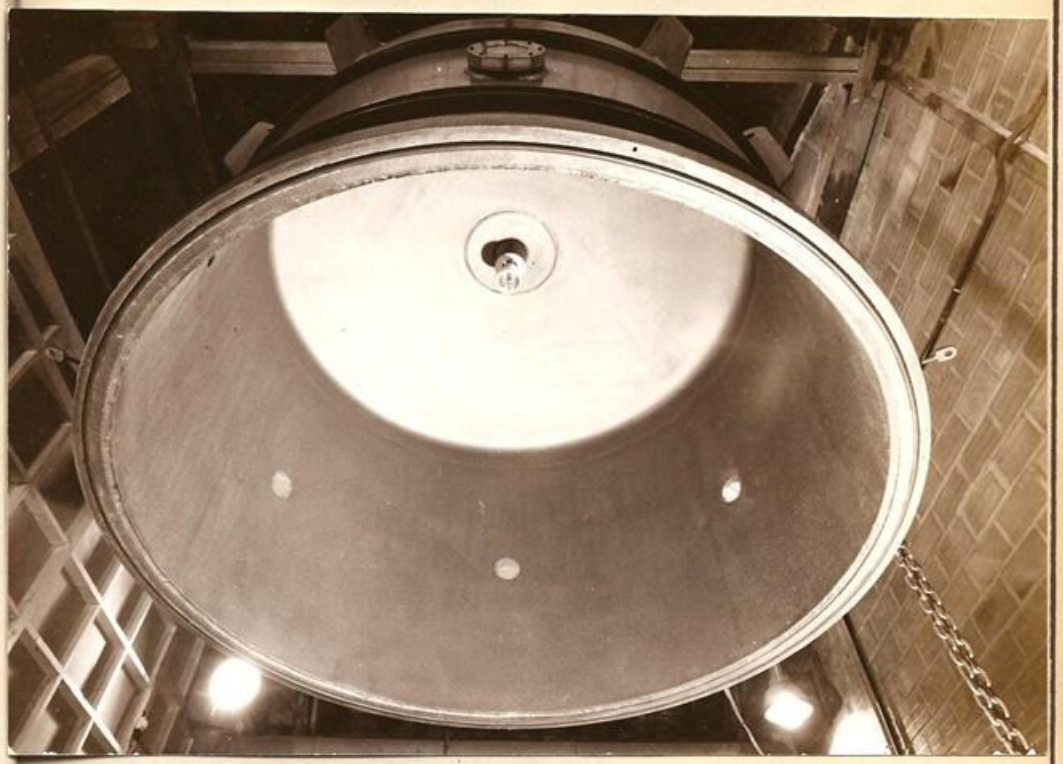


Photo n° 4

The tub is cylindrical with a heigth of 1010 mm.

- la cuve est cylindrique sur une hauteur de 1010 mm.
- Diamètre intérieur : 1476 mm. It's diameter is 1475 mm.
- Epaisseur de la tôle constituant la partie cylindrique et le fond rapporté : 12 mm.

The metal thickness in the cylindrical part and the molded bottom :12 mm.

.../

Cuve en position haute, reposant sur 3 chandelles.
Au premier plan, la pompe primaire.

Tub in its upper position resting on 3 support pillars in Front the primary pump is seen

Photo n° 5

Pump Assembly

2 - ENSEMBLE DE POMPAGE

The assembly consists of two pumps in series with a system to measure and evluate the vacuum status

L'ensemble de pompage est constitué de 2 pompes montées en série, et d'un système d'appréciation de vide.

Vide obtenu après 2 heures de pompage dans la cuve : 5.10^{-5} mm. de mercure.

Fter two hours of pumping air out of the tub we obtained 5.10-5 mm of Mercury

Photo n° 6

On voit au centre, à gauche de la pompe secondaire, la traversée inférieure de haute tension avec son tore d'arrivée de courant.

By viewing the center and on the left of the pump we see the Feed thru point for high voltage with it's toroid conductor

.../

2.1 Characteristics of various pumps

2.1.1 Primary pump is an Edwards ref: Speedivac 1SC.1500

- This is a rotary linked piston in a well enough sealed cylinder. Those pump is capable of producing .1 mm of mercury after pumping continuously for 20 minutes in the tub

- Rate of effectiveness 1300 1/mn at a speed of 360 turns per minute

- Capacity of the oil reserve:6 liters (reference specs of the oil Speedivac no. 017

- Water cooling at a minim um rate of Half of 1 minute when the water temperature if at 15 degrees C.

- Water cooling at a minimum rate of 1 times 1/mn at 23 degrees C

-Water cooling at a minimum rate of 2 times 1/mn at 26 degrees C

- The pump is torqued by a 3CV motor turning at 1430 T/mn. Supplied by a 220 volt 50 hertz Star wound tri-phase motor.

2.1.2 Secondary Edwards pump reference Speediva type 903.B with Baffle Valve 1218

This is a diffusion pump which functions with silicon oil type 702. This oil is capable of producing a vacuum of $5.^{10\text{-}5}$ mm of Hg after 2 full hours of pumping out the tub

- Rate 900 1/sec

- Stopping pressure 0.5 mm. Hg

- Heating: 20 to 25 minutes needed.

- Heating resistance 2250 W @220 volts.

- Water cooling rates

  2 1/mm when water is at 10 degrees C

  3 1/mn when water is at 15 degrees C

  6 1/mn when water is at 20 degrees C

2.2- Vacuum Control

The vacuum control system consist of the following item :

a) An ordinary Manometer controls pressures between 10 and 760 mm of Hg. It is direct connected to the vacuum Tub (through the Plate).

b) A Primary Pressure detection gauge of the type Pirani with head M.6 (Photo 7).

This detector is mounted in between the primary an d secondary pumps and it controls the pressure of the primary circuit between 0.5 and 0.001 mm. of Hg. It's mode of operation is as such: variations in pressure acts upon the refrigeration of a resistance which is heated by the passage of a current within or through the resistance. This resistance acts upon the equilibrium of a Wheatstone bridge.

The pressure variations within the Manometer controls the balance of the bridge and it's incremented variations are read directly across the Wheatstone bridge and are incremented in millimeters of mercury.

c) A secondary pressure detector is mounted in the same general area it is a Phillips type gauge model 2MSA (Photo 6). This gauge is mounted directly upon the TUB and is capable of controlling the pressures. of between 5.10^{-3} and 0.10^{-5} mm Mercury.

Within the detector, small pressure changes are acting upon the cold cathode discharge tube, - whereupon a stream of electrons is focused by a magnet and the results are read through a galvanometer graduated in microns of mercury. The measurement originates in the electrical circuit of the cathode to anode conduction path.

d) A Philoni model 1 Gauge set permits pressure measurements between 0.5 and 10^{-5} mm of Hg.
A measuring scale is established for the Philips gauge. It is graduated between 5.0^{-3} to 10^{-5} mm of Hg.

A set of commutating valves permit passages of air pressures from one gauge to the next. This set of valves is our best leak detector.

Begin the process by flipping the commutators from LT1 to LT2 corresponding to the adjunct rheostats.

A Galvanometer is hooked-up to the terminal strip G. Spray an amount of liquid hydrogen wherever a leak is suspected.

Rheostats Lt1 and LT2 are set up to balance a null spot on the galvanometer gauge. If and when leaks are detected there is a brisk displacement away from the null spot on the gauge.

2.3 - Mise en route du groupe de pompage

Photo n° 7

.../

On photo number 7 we view the following items:

- In the immediate foreground is the primary pump mechanism.

- On the primary pipe is the primary air passage (a) valve which follows through to the Flow (B) valve. To the left of the primary valve (b) is the "Main air intake" to the Tub.

- The secondary deviation tube goes to the secondary pump and has a Pirani detector gauge (D).

- Valve (E) is the pressure monitor for the Tub itself along with its own valve input directly conducting through to the secondary air pumping mechanism which is hidden behind the desk assembly.

- The control panel which holds the set of Philani Gauges is located above the Manometer described in section 1.2. Immediately to the left of this area is a calibrated leak point and the two main power switches P.1 (Primary) and P.2 (Secondary) are seen.

This is the Starting sequence for reducing the atmospheric pressure to the very least amount of air-particles as possible.

The silicon Oil Level is verified. The water cooling cycle is activated and the flow is carefully noted as detailed in INSTRUCTION I.1.1 and I.1.2.

Valves A,B,C,D, and E are closed.

We flip switch P1 on and the primary pump turns. The Pirani gauges give us a primary pressure in the pipes.

We output valve D and a vacuum is formed in the secondary pipes.

When the pressure reaches 0.1mm of Hg on the pirani gauge,

- We Flip P.2 on. The secondary pump starts.
- We close D.
- We turn off the Pirani gauge.
- We open B, and the primary pump empties the tub.

- After 20 minutes that the P.2 Pump is running and the pressure in the tub reaches 0.1 mm of Hg.

- We close B.

- We open D.

- We open E; the two pumps are now in series and are now making the tub empty of the rest of the air.

We activate the Philips Gauge while the secondary pump completes its cycle (approximately 2 minutes after E is opened). The needle indicates an abrupt downwards change in pressure.

After two full hours of pumping the pressure inside the tub must reach approximately 5.10^{-5} mm. Hg.

3 High Voltage Section

3.1-High Voltage Feed-through.

The two feed-through have been fabricated by "General Electro- Ceramiques." They were designed to withstand voltages up to 150 Kilovolts.

The feed-through were conceived specially for mounting on the vacuum tub assembly. The feed-through permit rotation as well as translation displacement from the exterior directly through the Tub and Plate assembly (see page 16). This assembly is used to tests the torsion field. The assembly is designed to be assembled and disassembled using a special locking mechanism which engages itself when the Tub is lowered onto the plate assembly.

What follows is the report translator of the basis in measuring mass, vacuume density as measured in mm of Mercury. (two annotated documents)

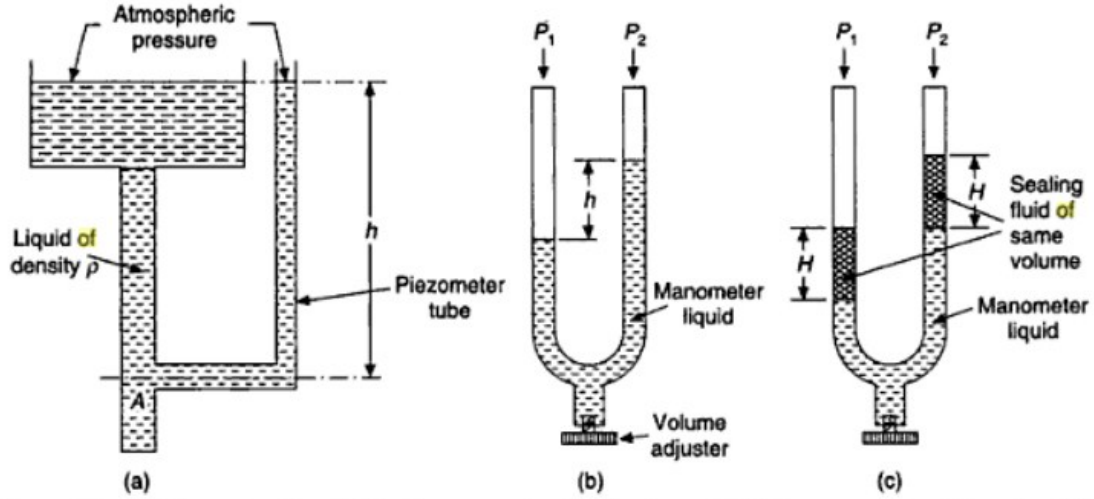


Figure 5.4 (a) Piezometer tube; (b) U-tube manometers for direct use; (c) U-tube manometer with sealing fluid.

manometric liquid. The manometric liquid is mercury in most cases or water for low gauge pressures. The pressure difference $P_1 - P_2$, is, as before, given by ρgh, where ρ is the mass density of the manometric liquid.

Mass density may become variable due to **beneficiation**

When it is necessary to measure pressure of a liquid that must not come in contact with the manometer liquid, a sealing liquid is used as a buffer, in each limb, on top of it as shown in Figure 5.4(c). The sealing liquid must be lighter than the manometric liquid but heavier than the fluid under test. Equal quantity of the sealing liquid is added to each limb of the manometer so that the two amounts stand balanced.

3. The well- or cistern-type manometer is widely used because of its convenience in requiring reading of only one level of the manometric liquid, instead of the two levels of the U-tube type. This system shown in Figure 5.5(a) is favoured because one secondary transducer located on the narrow-section tube serves the purpose of pressure measurement. The level of the liquid in the well having its cross-section A, much larger

5.2 BASICS OF PRESSURE MEASUREMENT

Measurement of pressure assumes great importance at all stages of scientific and engineering measurements. The techniques available for measurement may be divided into three main types: those meant for pressures (i) above the atmospheric pressure and relative to it (known as gauge pressure), (ii) lower than the atmospheric pressure and extending to very low values, designated as negative gauge pressure or vacuum, and (iii) very high pressure expressed in atmospheres. Absolute pressure is with respect to absolute vacuum and is equal to the force per unit area exerted by a fluid on the walls of its container. It is indicated by the subscript 'abs', as for example, P_{abs} (or P_a). Differential pressure is the net force per unit area exerted by the fluids present on either side of the wall separating them. Gauge pressure is indicated by the subscript g, as for example, P_g. All pressure gauges are normally calibrated to read pressures higher than atmospheric pressure and read zero, when test pressure is exactly equal to standard atmospheric pressure.

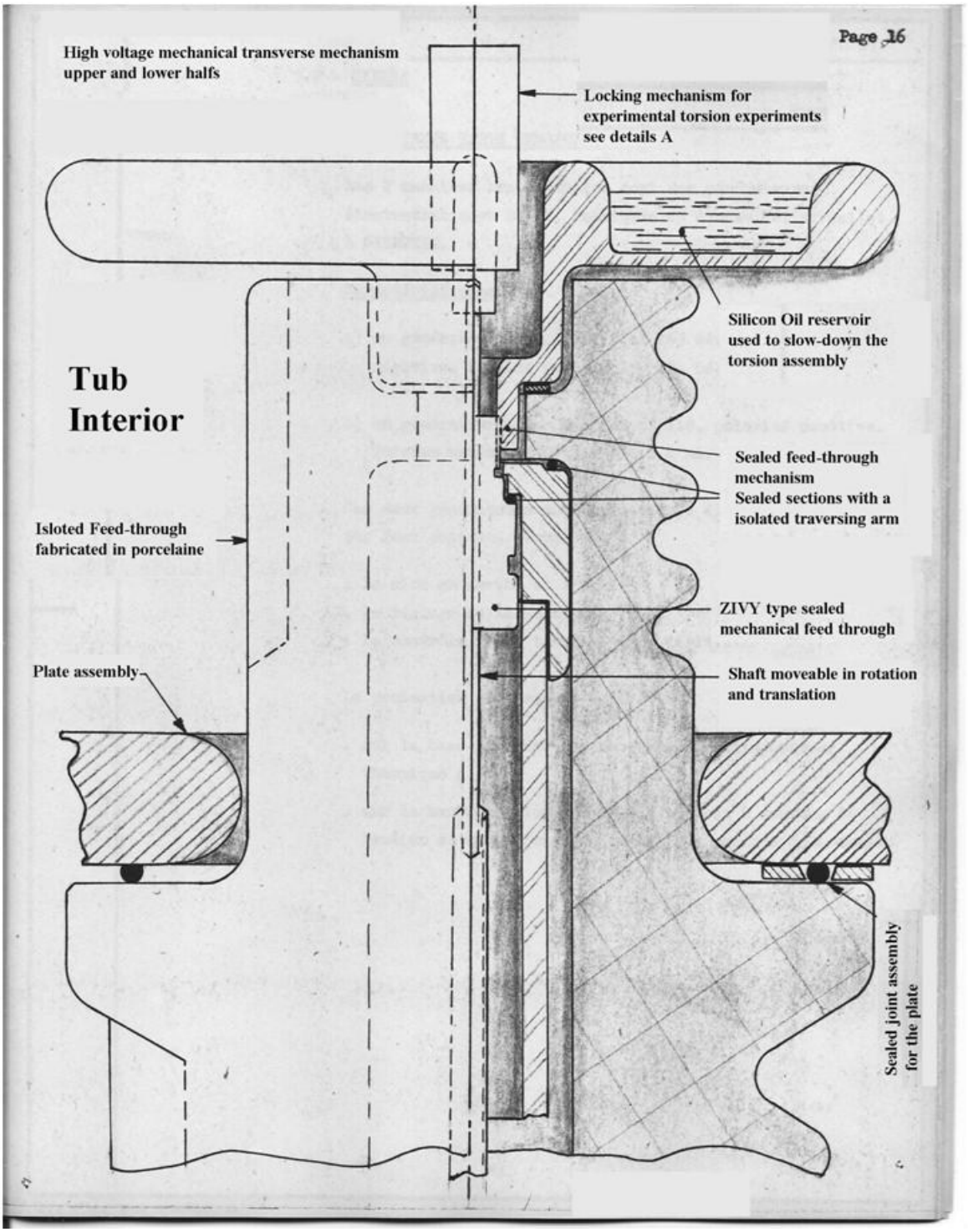
Atmospheric pressure is to be expressed in N/m^2, while in practice it is referred to the height of the mercury column of a barometer. Standard atmospheric pressure is the pressure due to a column of mercury, 76 cm high at 0°C at sea level. It is equal to 101.325 kN/m^2.

In meteorology, pressure is expressed in *bars*, one bar being a pressure of 10^5 N/m^2 (10^6 dynes/cm^2). A smaller unit is the microbar. Very low pressure and vacuum are generally expressed in units of *micron*, one micron being equal to the pressure exerted by a column of mercury of 1 μm, while a *torr* refers to a column of mercury of 1 mm.

Conventional mechanical instruments are based on two distinct methods:

1. Direct measurement by comparison with the pressure due to a column of liquid of known density.
2. Indirect measurement of the pressure, by measuring the effect of application of pressure over a known area of an elastic element, such as the flat diaphragm or Bourdon tube.

Here we see the close-up design of the spin assembly in a sealed vacuum



3.2 Generating the High Voltage

There are two SAMES type high voltage electrostatic generators which were fabricated at 29 Avenue Félix Viallet in Grenoble, France.

Characteristics:

a) A K.150/2 generator serial number 163 series 4 with a negative polarity producing up to 150 KV at 2mA.

b) A CD.150/2 generator serial number 118 with a positive polarity producing up to 150kV at 2mA.

These two generators are controlled at a distance from the main control panel which permits the following actions:

- Starting and stopping the high voltage,
- Adjusting the output voltages, and
- Adjustment and control of the current availability

Additional protection is assured as such:

- On the low- voltage supply side there is a thermic disjuncture.
- On the high voltage side there is a regulated over-current disjuncture.

4 - Description of the interior continuous rotating surfaces

Photo n° 8

The rotating assembly that we see in the center of the image permits us to conduct qualitative experiments with voltages up to 110 Kv. The turning section is supported by a precision ball-bearing assembly

The isolation column is made from Plexiglas and serves to separate the upper conductor from the lower conductor arm. Firm physical contact is assured by a precision ball-bearing assembly under spring pressure. The resistance coupling with respects to spin is approximately 1 g/cm. The testing arms are feed through points for the upper high voltage feed and the lower high voltage feeds which is seen entering the assembly from below.

Description of the TORTION FIELD TEST GEAR

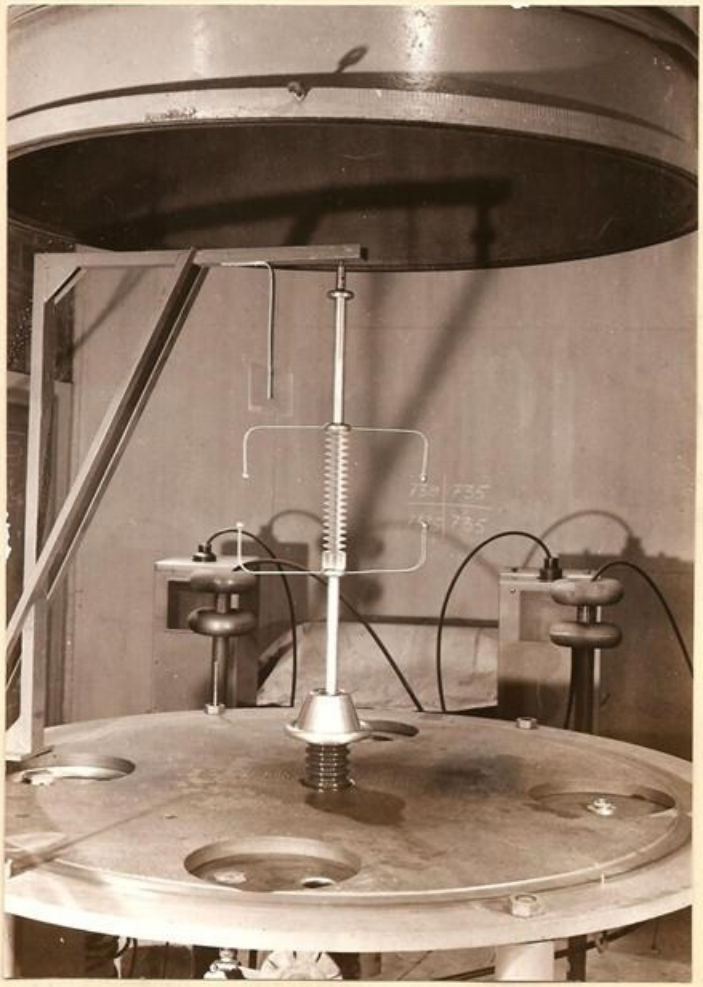


Photo n° 9

This Experimental assembly allows us to quantify the trials we conducted in rotation or to determine if other try-outs were of a more sensitive nature.

We constructed the following set-up:

- A Plexiglas isolator graduated in degrees in the lowest part.

- Two (2) each wire conductors isolated in the insulation tubes the length of each is 255mm. sections between 20/100 mm. We used un-oxidized steel wire with a capacity of 180KG/mm^2.

A system of torsion field counterforces caused by an "oil braking" mechanism in which two paddles are seen forcing against the silicon oil as they turn (see Photo 10). This mechanism gives us a precise "null force" figure which we can then calibrate our torsion force measurement readings from.

The Oil braking System is enclosed in an upside down cup which we see in Photo 9
This is the assembly which precisely balances our torsion force measurements.

The voltage feed conductors are placed inside multitudes of isolation tubing arrangements tailored to keep a minimum high voltage glows, discharges and /or leaking from occurring.

The most distanced points from the high voltage generators constitute the terminals where the torsion wire is fixed upon. This permits the use of a specially designed locking and unlocking mechanism by which upper assembly can be separated from the plate assembly (see locking and unlocking details on page 22 and 23).

Photo n° 10

Silicon Oil Braking System to measure null torsion

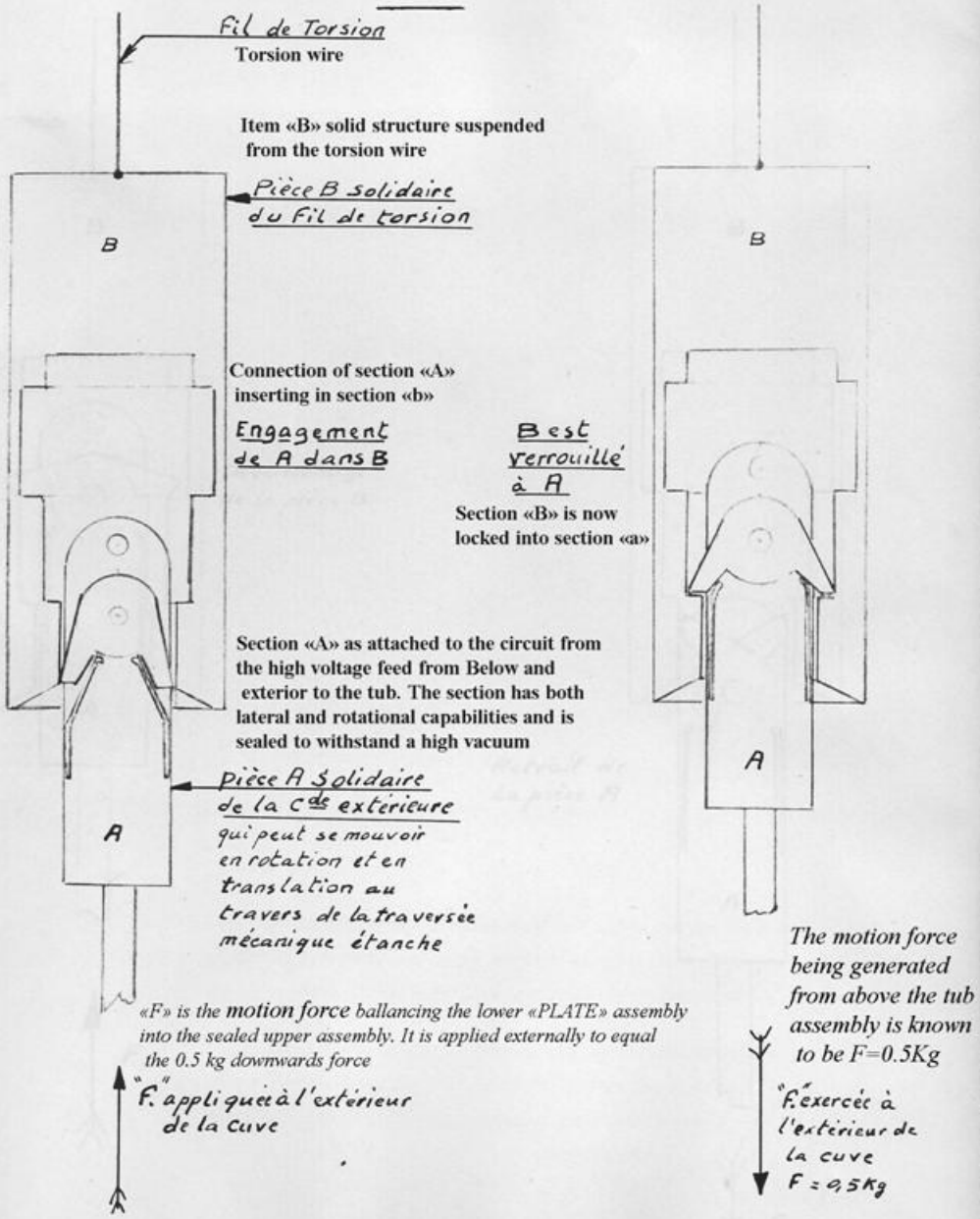
Système d'amortissement du dispositif de mesure en torsion.

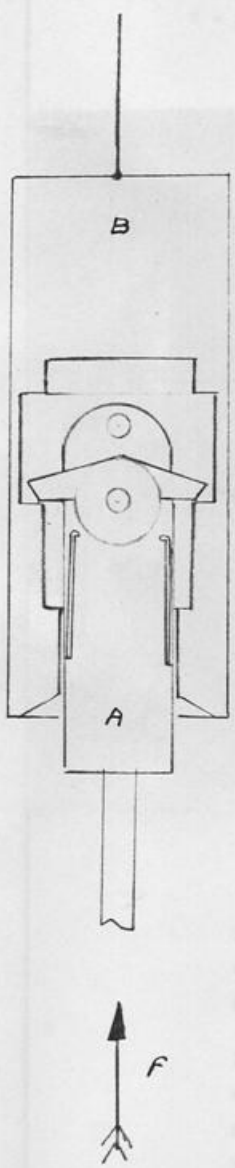
.../

Scale 2:1
Echelle 2/1

Dispositif de verrouillage du montage d'essai en torsion Commandé de l'extérieur de la cuve

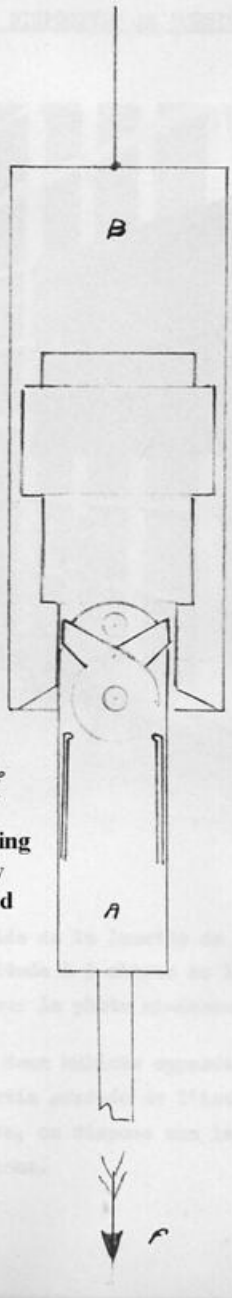
Locking support mechanism used to produce tortion field measurementds from the outside of the tub





Unlocking sealed mechsanism «B» from the fixed section «A»

Déverrouillage de la pièce B



Retrait de La pièce A

Section «A» Withdrawing with the plate assembly as the tub body is raised and the vacuum seal is broken

-

S.A. Page 24

6 - LECTURE DES MESURES ET ETALONNAGE DU DISPOSITIF DE TORSION

Reading Torsion Field Measurements from a Ballanced rotational translational assembly capable of quantitative measurement relative to the center of the earth.

Photo n° 11

The degree of torsion measurements are conducted using a looking glass (telescope -seen on the right) which is located 3 meters away from the center of the Tub Assembly The looking glass stand is «ground-centered» to the earth and pointed directly at the interior experimental set-up

GTP N°154

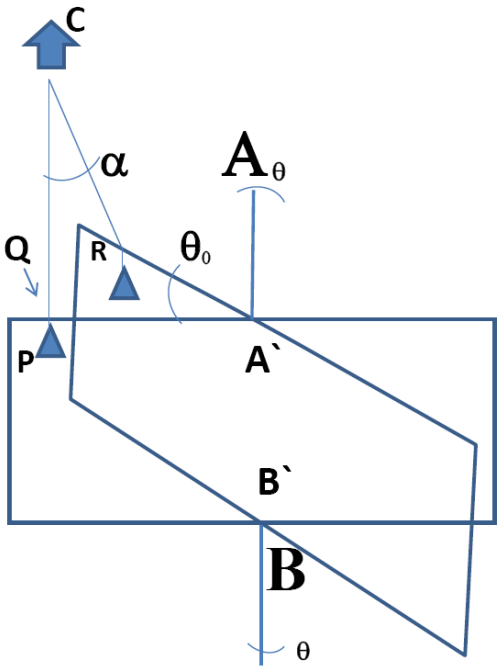
The Procedural steps required to obtain empirical evidence of the torsion field effects using Biefeld-Brown force in a near complete Vacuum is hereby **CONFIRMED**.

Such evidence ids proven using the empirical notations of our experiments as such:

We have reduced the problem to a highly schematic physical model using standard EGS units of measurements and constants.

On Photo 9 we witness a "mass" having the quantity "P" (*poids* in French) which is defined in newton/grams usually This mass is made to feather tail a certain minor pressure upon the spin of the torsion wire and is balanced to provide a controlled starting point in the torsion measurements.

A-A` and B-B` are the two calibrated torsion field wire assemblies:



If we were to apply a force on the torsion system by turning points A and B of an ANGLE of θ, the assembly will effectuate a turn at an angle θ_0 by pushing *P* from point *Q* in direction *R* whereas *P* is the described angle from which *C* is a fixed point.

The equilibrium force is hereby calculated as such:

$$P \sin \alpha = (\theta - \theta_0)$$

P is a known value, *therefore* α, θ *and* θ_0 *are measured and we have:*

$$C = \frac{P \sin \alpha}{\theta - \theta_0}$$

6.0 Results of the experiment

6.1 Trials in continuous rotation

The vast majority of the equipment described in the report number 1.7.57 has been tried-out using the very same continuously rotating apparatus.

We have constituted the following results:

With the exception of the Condenser described in (report 1.7.57, Annex 3.5 page 79) and by augmenting the high voltage to 50kV positive and 50kV negative (the resulting series voltage being a total of 100kV).

Various Dielectric condensers made from Plexiglas are **NOT** the sources of displacement when we take the friction factors into consideration. We have observed no oscillation of any kind in the rotation displacement apparatus.

It is obvious however, that the dielectric Plexiglas condenser is not inert, and it oscillates lightly. The seat (originating point) is rather strong from the vertical plane. The phenomenon is reproducible. It might even be the results of erroneous and unidentified attraction/repulsion forces which we are yet incapable of discerning due to the nature and size of the vacuum tub assembly.

6.2 Torsion Field Experiments

In an effort to augment the sensitivity of our force detection system we constructed a torsion measuring apparatus the final results are as shown:

- Wire/disc assembly (annexe 3.3.2, page 56)

NO RESULTS

- Double disc system enclosed in Plexiglas (annexe 4.3 page 100)

NO RESULTS

- Condenser encased in an Araldite Sphere (annexe 5, page 106)

NO RESULTS

- Condenser planned as an a-dielectric (annexed 3.5 page 79)

A very weak oscillation is felt of approximately 3 to 4 degrees whereby negative is chasing positive electrode assemblies. (High Voltage feeds in these tests were 50kV + and 50kV).

- Double disc system completely encased in Plexiglas with the addition of a block of Barium Titanate (TB6000 CSF). This experiment is analogous to the one described in annexed section 4.5 pages 103, 2).

- A total system deviation of 30 degrees from negative to positive displacement. When the polarity is reversed on the system, so does the directional nature of the displacement.

We have established a coupling of approximately 1gm/cm (voltages were measured at 55kV positive and 55kV negative).

7- CONCLUSION

It seems perfectly reasonable to assume that the concentration of a force of some kind accumulates within the presence of a strong dielectric. The most rigorous and substantiated dielectric materials do render the resulting phenomena more evident and rigorous

THE END

This concludes the Paris report of 1959. Shortly before this report was completed, all further tests and experiments were halted, the equipment was disassembled, and sold separately, then the company itself was purchased, re-organized and several divisions were closed. No other experiments were conducted by Messieurs Cornillon and associates since. It is not known if the text of these experimental results were then translated and provided to Thomas Townsend Brown until March of 2012 (the date of this translation).

This Translation remains the most accurate and comprehensive efforts to report the experiments as faithfully and accurately as possible under the cultural restraints which permitted very little of the experimental spirit to be demonstrated under the difficult working environment, humidity, and radiation hazards related to this work.

Raymond Lavas

Here are Translated Correspondance between The French Office in the USA and the French headquarters of theAviation company financing the experiments:

Translation of the letter from Cornillon to; Societe Nationale de Construction Aeronautique du Sud Ouest

Text in Blue are comments by the translator

14 April 1955

Intelligence Report on Non-traditional Propulsion Techniques

As soon as I arrived in France I pursued a bibliographic research for the following purposes:

1-to assemble information on specific points of interest such as; Electric Field of the Earth, in Space, and in materials with high Dielectric Constance's, -also Coulomb's law in a heterogeneous environment.

2-To verify if we could find any other traces of information related to the 'Aviation Report' in non-classified publications.

With Respects to the first issue, I have assembled an important voluminous bibliography of information which I have not yet been able to sort through, and read. Once I have had the chance, I shall prune this bibliography to eliminate information of secondary importance..

With respects to the second issue, after extensive research in the 'Pacific Aeronautical Library' I have found the enclosed photocopied document. I think you will appreciate, -as I have, the importance of this paper, -not only because of it's pertinence in the explanation of Flying Saucer propulsion techniques which have thus far remained an unknown phenomena, but also because of the similar analogy of this intelligence report and its common relationship with the information supplied within the 'Aviation Report'. -Not to mention the fact that they have actually built one of these devices using this scientific principle. Wherewith all please note similarities with the information published by 'Jessup' in his book 'The Case For the U.F.O.' which has just been published. I am also sending you a copy of this book which appears to have several similarities with Brown's ideas as described in the first document.

The paper from the Pacific Aeronautical Library happened to include contact information for the author. I immediately scheduled a meeting with him to find out if these people were serious researchers or

hoaxers. I must admit being perplexed by Dr. Mason Rose who is a prominent Hollywood psychologist. I asked him 'what the devil did psychology have to do with flying saucers'. Dr. Rose provided the following astounding explanation: He explained to me that he was a specialist in 'Biological Electric Fields' and that he had met and been associated to T. Brown during his field research studies. Together they found out that there is an electric field running upwards through the cell-bodies of Human beings, Animals, and even Plants. This electric field is influenced greatly by the earth's local electric field. An individual's nerve impulses are affected by electric field impulses, and laboratory tests have shown significant correlations between the local gradient electric field variations and various biological electric fields. This led to the discovery that an artificial electric field running through the soil of seedling plants increased their growth rate by a factor of two (2).

Dr. Rose was a member of the air quality management district of Los Angeles and was in charge of the 'Smog' assessment program. They had discovered that the most pernicious effect of smog was not 'smoke' by itself, but rather, it was the 'ill-effects' attributed to the local electric field gradients. Dr. Rose is a credible source because he is also a member of the Federation of American Scientists.

After I had absorbed this information Dr. Rose suggested we meet the next day with someone who had a more intimate relationship with T. Brown. This resulted in our second meeting at Dr. Rose's residence. There, Dr. Rose presented me to a prominent nuclear physicist named Dr. Shank. (When I met T. Brown later on, he told me Dr. Shank had worked on the Manhattan Project at Los Alamos during the Second World War). After this meeting and upon further study of the documentation, -I concluded that I was indeed meeting serious people and not amateurs or hoaxers. I then proceeded to explain how and why we had seriously decided to pursue our research in these Flying Saucer vehicles. I explained how we had proposed certain hypothesis (still undeveloped) about how to go about creating such propulsion systems. (Obviously, I neglected to go into details). In the beginning we feared being branded as crack-pots chasing fantasy, however it was a British news article on the subject of certain experiments conducted in the United States which convinced us that our area of study was justified and therefore I was asked to pursue any non-classified materials related to this area of research. Hence my discovery at the 'Pacific Library' which led to our meeting of the principles involved.

To avoid skulduggery, I immediately broached upon the subject of security, and I was surprised to learn that because I had though the subject matter to be of such importance to national security and the people involved were 'of such high calibre', I had assumed the knowledge issue had consequently been reserved by the U.S government as classified information. If this was the case they should tell me so and I would immediately cease any further inquiry on their activities. If the opposite were true, then I would be immensely interested in pursuing this research with them. They assured me that although the U.S. Government had been interested in the past, they had decided that there was nothing new to learn on the subject and had dropped out of the ongoing research..

Here are the details of the relationships: Dr. Biefeld was a student of Dr. Einstein. T. Brown was a student of Dr. Biefeld and during the course of their research on the theory of relativity in 1923 , Brown came upon the discovery which subsequently has become known as the Biefeld-Brown effect in the enclosed documentation. Brown's discovery is the force imagined to be behind the propulsion system which he has successfully demonstrated in his scale models.

During the war Brown was in the navy and worked as an officer in electromagnetic mine sweeping and acoustics. He then became officer in charge of Atlantic Radar Operations. When the war ended Brown found himself living in Hawaii where the naval admiralty had been impressed by his demonstrations of a model submersible propulsion vehicle. Washington politicians did not value any of this work after the war however and Brown decided to move to Los Angeles in 1951 where he successfully filed a dozen different patents on his technology, -one of which included the 'Flame Jet Electric Field Generator'.

When Admiral Kimball saw one of the demonstrations, he immediately sent for the chief of the Naval Research Laboratory who was himself very impressed by the demonstration. The Chief of Naval Research then assigned yet another government scientist to evaluate Brown's ideas. (I believe this man's name was Willougby M. Cady) Shank and Brown were questioned and analyzed regarding the advantages and disadvantages of the technology over a 30 day period, at the end of the 30 days and on the eve of his departure for Washington the government scientist visited Shank and declared the following:

-Many of the variables causing the phenomena can be explained using Classical Physics

-There are still certain aspects of the phenomena which defy every know classical explanation therefore it is worthwhile pursuing further investigation to find the underlying principles involved.

This conclusion was sufficient as far as Shank and Brown were concerned because that scientist's official report would be considered to be the final authoritative documentation on the subject, and surely this was all that would be necessary for them to find alternate funding to continue their research.

The situation began to become worrisome when the scientist's 'official report' failed to find it's way back to Brown and Shank. They only found out when they finally contacted Kimball who had now become president of 'Aerojet Corporation'.

After reading the official report, the two were stunned by the seemingly contradictory conclusions. In this version, the government scientist concluded that all of Brown's discoveries could be explained

using classical physical principles, and proceeded with trying to lay out the various theoretical explanations one by one. (I have photocopies of this report by the office of Naval Research dated 15th of September 1952)

Shank looked at the report and responded 'nobody can make heads or tails out of these explanations', and the effect itself remains a scientific mystery. (Attributed to Ionic Wind)

According to Shank and Rose, Brown, -who has spent $500.000 dollars of his own family fortune decides to abandon the research to move to the East Coast to find a job. Shank decided to go back into Nuclear Research.

In the spirit of true scientific objectivity, -Shank was unable to come up with empirical evidence about how the mysterious flying saucer effect is explained scientifically, however , he claims that the science of it is worthy of further research. Shank and Brown concluded our meeting by saying that it would be wise for me to meet with Brown. He is the person who has *tons of information* on this subject matter and he has conducted numerous experiments and demonstrations, and that all he would ask for, -is for me to find the research funding necessary to continue the pursuit for an explanation of the force phenomena. There is even a chance that Brown would be willing to move to France to continue the research. I responded that I would greatly appreciate meeting Brown to discuss this possibility. They don't have his present contact address however they know that he was employed as a consulting engineer at Brash Electronics, and so they will make contact with him and pass along the request for him to call me.

A bit later on I obtained Brown's telephone number in Washington. Unfortunately I was unable to work due to a foot injury therefore I was unable to go to Washington until the 7th of April. There I met Brown for the first time. Brown asked me to define "exactly what it is", -that I expected of him. As I had previously done with Shank and Rose, I explained to him how I had found Dr. Rose's report (which I promptly showed him) then told him I had met with Shank and rose and that they had suggested that I meet him directly. If the discussion about our collaboration is permitted (according to Shank and Rose) I would like to speak to him about going to France to meet our engineers and scientists.

Dr. Brown looked over Dr. Rose's paper and smiled saying; "we have made enormous progress since this report was written", however with respects to my inquiry he told me that he was not at liberty to discuss the issue at that exact moment. Without being specific he explained that he was under oath with official organizations not to discuss the subject with anyone. He did mention that he would inquire about the possibility of collaboration and that I should call him the next day. I told him I was surprised to hear about the security issues because Shank and Rose had informed me that the research had been abandoned. He told me that it wasn't their fault because they themselves were unaware of Brown's recent activities. He then asked me to explain to him if I understood the underlying principles which

were mentioned in the Aviation Report. I proceeded to describe how well I understood project W*(blacked out)*, - issues about Massive 'K' values, -Flames, etc… and in fact, I finally did manage to impress him with my knowledge on the subject.

He immediately explained to me that this subject is now "classified information". He mentioned that in the past part of the information had become momentarily declassified, -only to become reclassified almost immediately afterwards. That is, -no doubt the point when W*(blacked out)* project information leaked out. The W*(blacked out)* project now deals specifically with dynamic applications of the B/B principle and these applications are now classified. As mentioned above, the present "dynamic" applications are classified; however, there also exists a completely different "static" application which is left to explore by the open scientific community. He explained to me that there are still breakthroughs left to be achieved in aviation material sciences whereby the inertial properties of the so-modified aviation material would remain unchanged however the material itself is likely to experience a reduced attraction to the force of gravity, -such that the material would react as if it's weigh would be reduced by the order of 1/10 its normal weight. In fact, rare earths are now being exploited because of their vulnerability to this negative gravity force effect. Brown mentioned a material known as "Loess" which is located in Asia and responds alternatively to the force of Gravity. Brown also mentioned that an element known as Erbium is the "Rare Earth" substance which responds most favourably to the gravity reducing effect. (as in Lanthanide, -which is the rare earth equivalent). If more research were performed on these materials, it might be possible to create new super light-weight aircraft materials. Brown claims that some of these materials exhibit a slightly higher ambient temperature, which seems to suggest a source of energy which is demonstrated to occur at the molecular level rather than the atomic level of thermal interactions. Argyle exhibits this type of effect and Brown mentioned that East German airport runways have recently been resurfaced with an Argyle mixture to help melt the new fallen snow on the runways. He concluded that this activity suggests that people living on their side of the iron curtain are on the same track as we are, and that further research in this domain is now a "life and death issue". A man named Charles F. Brush was the person most prominently responsible for conducting research in this field in the past. Brush was the founder of Brush Electronics, General Electric, Linde Air Products Etc. Brush died during one of his experiments (in1929 at the age of 80) shortly afterwards the government lost interests in continuing this avenue of research in material sciences. Brown said he was in contact with European scientists who have also pondered upon this area of research, and if there was a ongoing research project in Europe surely the US would take note of it and they would probably want to implicate themselves in the project in an effort to determine how the underlying principles of this mysterious effect actually function. Brown asked me to call him on the phone the next day and in the mean time he would find out exactly how much he can openly contribute to a European collaboration.

I called Brown the next day, and when he told me there was a possibility for collaboration between our respective nations, I invited him to have diner at our home. During our diner meeting I asked him how much specific information would be shared through our collaboration. He specified that all dynamic applications of the Biefeld Brown effect were off limits, however all static applications of the technology were available to explore. Brown then laid out an elaborate research proposal to be performed somewhere in Europe. I explained to him that such an elaborate research proposal would be an

overwhelmingly difficult project for a simple aviation company to support, and that it would need support from a "National Research' project perspective. I told him that it would be more productive to have him come to France to conduct a meeting with several of our finest French scientists, whereby the possibility of a international research project proposal could be formulated which could include the American government's interests. With a sense of urgency he asked me to go back and feel out the territory to see if there was a genuine possibility that such a collaboration could occur somewhere in Europe. At the moment of our diner meeting these discussions remained a bit too vague for anyone to make any commitments in this mater, and he proposed a second meeting whereby he would supply me with more scientific documentation originating from Bush's work on the static applications of the effect. This information could then be forwarded to all of you (in France). He told me that he had to be at the Franklin Institute on April 14th and he asked; -would there be a possibility for us to meet again in Philadelphia? I agreed to meet with him because I live near Philadelphia and perhaps we could continue this discussion at my house afterwards.

Thus, I met Brown Yesterday in Philadelphia. This time around, I noticed a distinctive change in Brown's character. Unlike our previous meetings Brown had become more reserved and enigmatic for various reasons, and he politely refused to come to my home afterwards because, -as he said, -he had an urgent meeting to attend to in Washington. Brown has reiterated the same arguments and propositions as he had in our earlier meetings and this time he showed me some of Bush's most interesting work and provided me with the annotated references of this work. I then learned that he had apparently received a letter from Douglas Aircraft since our earlier meeting. They were now interested in working on this same static application of the material science. "Don't you think that the reason Douglas Aircraft has approached me is because they have also read the same Aviation Reports as you have" retorted Brown.

To resume, I proposed (if this is OK with you) for Brown to return with me to France if there is no opposition by the US government. In France we could then establish research goals and specific material science objectives. He is adamant that we should include scientists which he has been in contact with who now live in Holland and England. These scientists would be in correspondence with him on any future research objectives. He stated that upon his return to the United States with a well established and solid research plan in hand he could convince the US government to participate in funding the combined research objectives; otherwise we would have to begin a less ambitious research program locally.

I realize that all this is a bit vague and "there is a big plate with much to eat on it". (literally translated) However if you think like I do, that there are good reasons to look further into this, then it would be a good idea for me to return (to France) with Brown as soon as possible.

If you decide this is a good idea please send a cable message immediately so that I tell Brown to put his things together to make the trip, and please purchase an air fare ticket paid in FRANCS to Air France and please send it to me. (Probably Brown's ticket)

If you think this whole avenue of research far surpasses the mandate of S.N.C.A.S.O. then please tell me so and also advise me as to how I should proceed further. Don't you agree that at the very least we should be presenting him to our "Scientific Attache" (Diplomatic core) so that there can be some kind of benefit. (to France)

End of translation

By: Raymond H. Lavas

3rd of October 1956

My dear Mr. Cornillon

I have received your letter of the 22 of September. I am in total agreement with your negotiating position in the contract with Brown and Moore. (by initials only).

I would certainly like to know what sort of entity is really behind Whitehall Rand. We have witnessed the presence of a most well respected personality (VIP) accompanied by an eminent Electrician. This first visit was a most interesting experience and the electrician suggested an experiment which should be very decisive and important.

Next Tuesday we shall be accompanied by another scientist sent to us by the same source as before. This time there will undoubtedly be some debate regarding the empirical evidence itself.

After witnessing our initial tests, I can see that when this all over with, -we will end up with some kind of *'official'* research mandate.. This negotiation will not be an easy task now that some of the parties have already positioned themselves with respect to various issues. We have a good strong starting position in light of the same ongoing research propositions taken by other nations.

Here is the problem with respects to Whitehall Rand. We are not supposed to approach this company. From a legal standpoint neither you nor I, nor anyone else in our company should solicit the help of an outside entity without first consulting with French authorities. I certainly hope that the people behind Whitehall Rand avoid contacting us directly because we don't actually have any official liaison with them. We only know Brown and Moore outside of this country (France).

The only conclusion either one of us can make, -is that Brown himself will be the person responsible for negotiating on behalf of Whitehall Rand.

To avoid the confusion attributed by Brown's evasive posturing, it might be a good idea to for us to ask Brown, -in written format, -to specify exactly whom-else Whitehall Rand represents legally because it would be our responsibility to verify such information from a legal standpoint before we undertake any agreement from this end.

Please specify the fact that we resist participating in a hostile take-over of Whitehall-Rand Company. It would become a rather awkward moment for us if we agreed as much.

Cordially

(signature supposedly is Visonneau's)

Point Pleasant PA.

6th of May 1957

My dear Delval

Please excuse me for having delayed answering your letter of the 8th of March.

My relations with Brown (by initials only) have slowed down considerably because he is leaving Washington, and now we are left to deal with Moore (by initials only) again.

Brown is now in Florida at Umatilla. I have not been able to find out what he's up to any more through my liaison with him nor my relationship with Moore. When I finally managed to get him on the phone, -I ***"cooked him"*** (literally translated) a bit to find out what he was doing, and all he said was that he was now a consulting engineer for a firm ***"in the same field of activity".*** For now I have no idea whom he is working with in the "Orange belt" (Florida area). In short, Brown is being as mysterious as always.

Moore came to see me here and I explained to him in no uncertain terms how we wanted to proceed on the new contract. I asked him if he had the information you requested to establish the contract terms.. He told me he would talk to Brown about it and get back to us afterwards. Since I had heard no word from anyone I decide to call Brown on the phone, and he told me that; -at first glance, he had no objections to the type of stipulations mentioned in the new contract, and that he would let us know promptly., Since then, of course I have received your contact offer which I then forwarded to him. He has just informed me of his acknowledged receipt of our offer, and (in English here) ***"agree with you that before you leave for France it would be desirable for us to reach an understanding on this matter so that we make appropriate future plans"*** (Brown's exact words). He also stated (in English again) ***"no doubt that you will hear from Mr. Moore within a few days".*** I am therefore waiting till next week and If I don't hear from anyone I'll hook up with Moore in Washington before my departure.

I'm in complete agreement on the terms of the new contract. I think it would be a good idea if we waited before signing whatever contract to find out if we can get our own well versed patent attorney to investigate these patent agreements that Brown has with the US patent office.

Apart from this I'm not going to try and hide the frustration I have suffered from my lack of participation in the interesting experiments that you have been conducting recently. I even mention my disappointment in a recent letter to Mr. Visonneau. I can't wait to get to Paris and catch up to all the exiting progress. You must have noticed the article in "Missiles & Rocke" and other periodicals. Please note that people are taking this whole area of science quite seriously. I think we are strategically placed in this field and I hope our new President, -who appears a lot more dynamic than Mr. Glasser, will find it beneficial to accord us the location, equipment, and funding to continue moving this research forwards.

My fondest wishes for you and the team

J. Cornillon

(signature)

21 June 1957

Mr. J Cornillon

P.O. Box 137

Point Pleasant Pen.

USA

My dear Mr. Cornillon

I intend to send you send you the modifications to a contract which you now have in your possession. I will send this final version of the contract out as soon as I am finished discussing this with ***M. Ziegel*** (whom I was unable to meet this week because both of our schedules prevented it).

I learned today by word of ***Mr. Visonneau;*** -that we are going to be privileged with the visit by two of the most eminent scientist in our nation. They will be coming sometime between the first and the Fourth of July. The very distinguished ***M. Francis Perrin***; -High Commissioner of the Atomic Energy directorate. and ***Mr. M. Dupouy;*** - Director of the National Science Research Center. I hope to be able to confirm this visit soon.

Last Saturday we finally tried the experiment to cancel the vertical component of a magnetic field originating from the Earth itself. We put a disc shaped coil around a "Bell" and put everything in a vacuum chamber. The bell was 50 centimetres in height for the coil part and 35 centimetres height for the bell itself. This set up allowed us to produce approximately 6 gausses

It does not seem to mater if the field is aligned upwards or downwards, our little system turned gently and seemed unaffected by the presence of this coil and it's magnetic field.

In the mean time, ***M. Bentejac*** is anxious to kick us out of here and I am hoping that he wants to move our operation to ***Suresnes*** . This location turns out to be a better place for us due to the size. At least our new facility would be as large as the space needed for the B.I2 project which he cancelled abruptly.

We have received final authorisation to proceed with using the financial credit for our formalized purchasing order and the rest of the standard project nomenclature which we are preceding full steam ahead to complete so that we will be ready to order the components when the appropriate time comes for us to do so.

I hope your return trip went well. Did you succeed with your trip to ***Dayton***.? How was that ***Stevens*** conference ? Was he satisfied with the items we sent him?

Please accept our team's fondest wishes for sincere friendship.

G. Delval

(signature)

Point Pleasant, Pa.

January 24 1957

Dear Mr Visonneau

Regarding : our relations with Brown (initials only*)

Brown called me the phone last night; he is concerned with delays in our collaboration with his research. He blames Moore (initials only) for these delays and mentioned the reason for the delay was because Moore* has been trying to establish overly restricted conditions in the contract. He has pushed Moore* to finish up and complains that such negotiations should not affect the financial support issue.. He advised us to bypass Moore* altogether and communicate directly with him from now on.. I reminded him that we asked to see the results of his past experiments. He said that until recently he has been unable to get to Los Angeles to sort out all the paperwork stored in his security vault.

Then ,-when I told him I was planning to go to Los Angeles next week, -he told me that he would try his very best to be there at the same time so that he could go through all the data and pull out the results we needed to see. He told me that several organizations have contacted him to begin work, and he would like permission to mention our association with him, and the demonstration that he performed in France. In short he wishes to know if we are open to the idea of an international collaboration with these other companies he is now in contact with..

I told him that I would consult with you on this issue and that I would ask you what our official position will be.

Personally, I am still reserve the same opinion expressed in my letter of November 15th. However, there is a distinctive advantage in not having to deal with Moore* and his complexities. Furthermore, our relations with Brown will be further ameliorated. In fact Brown himself mentioned the fact that Moore* had complicated the situation in our last negotiations. I think we can express our desires to keep a channel open for future negotiations and we could develop a counter-proposition based on a cash 'deposit' of say $1000.00 or $2000.00 (appears to be a small sum to keep the door open for a future position Visonneau may want to take)

Salutation and best wishes to you Mr Visonneau

J Cornillion

July 23rd 1956

To; Mr Jaque Cornillon

Saint Germain of Fosses *(a location)*

Dear Mr. Cornillon

On the 19th of July at 3:00 PM we received a visit from Colonel Barre. He was a sceptic when he first saw us, but by the time he was ready to leave, he had warmed-up to our proposals and even sounded enthusiastic about it.

We showed him the following:

1) The **condenser in oil**, -which attempted to work in reverse at first. We switched the electrodes from negative to positive and it worked just as well in forwards motion. We were very happy because this was our first try at this.
   We then proceeded with a very 'quick and dirty' historical briefing of the technology.

2) A pair of **discs** without **shoes*** *(*also possibly know as 'slippers')*
3) The **discs** with **shoes*** but without **points**. *(points are 'undefined')*
4) The **discs** with **shoes*** and **points**.

He asked us to perform an 'impromptu visualization' *(literally, -it could also be interpreted as 'impromptu demonstration')* which we tried to perform using Kaolin. This did not work, then we tried Talc, and this time it did work. It was a simple idea but someone had to come up with it! This whole thing functions around the 'Point' *(possibly 'point generator')* but it's not easy to make it work. **Finally there is NO TRACE of ionic wind**. *(literally, electric wind)*

We also tried another visualization *(possibly demonstration)* using a FLAME however this only means that we simply '*anticipated the flash'*. *(Difficult to establish exactly what this actually means technically).*

The last thing we tried was the **shoe*** with **Titanate** in a **vacuum chamber**. This demonstration barely worked but it was probably due to the 92% humidity factor, which gives us a good excuse to explain the lack of better results.

BARRE left the demonstration scratching his head in wonder; however he was definitely intrigued,-as if bitten by the proverbial bug.

If we have Mr. Visonneau's go-ahead, there will be a demonstration tomorrow whereby the following gentlemen will be in attendance: -The director of our municipal laboratory, and his adjunct, -Lt Colonel BECKER of the Ministry of National Defence.. Also attending will be Col. GENTRY, whom you already know, and **Mr. De-Montvignier**** who is our specialist in Electric theory and *'practical applications of such'*. We may also decide to include General LAFARGUE and others.

We are redoing the demonstration but this time we have a better handle on the historical events surrounding the development of this equipment. At least we now have a trail of successes and failures inasmuch as we need to establish the fact that nothing has been hidden regarding the failures we have had, and that gives our scientific advisors room to critique our experiments in a useful manner.

Until our next meeting, please have a pleasant vacation.

Best wishes

G. Delval

** **Marcel Demontvignier** ; **Paper :** *Theorie des redresseurs a arc à commutation retardée*.

Revue Générale d'électricité, Sect. Scientifique et technique, Tome 32, **1932**, No 19 dated **12/11/32** S. 625-635 (*Theory of delayed ark quenching circuits*)

April 22 1955

Dear Mr. Cornillion

I have received your complete package of April 14th. -Including the papers which were relegated to the president. You have just realized in one fell swoop what it would have taken us years to accomplish. Congratulations are in order for this fine effort of yours.

I've shown everything to the President, who was a bit stunned to find out that you failed to inform him about any of this on the day of his departure, Saturday morning after Breakfast.

This is mostly my fault because I failed to inform you that he had mentioned his renewed interest in the subject since our last discussion three months ago.. In the mean time we have hired a sensational mathematician whom I have since discussed this project with.

He (the president) launched the project on the first just before leaving. Our team now includes a scientific consultant and noted academician: L.R. (initials of the unknown new team member). I have aggressively encouraged him to pursue this area of research because we must get this project in motion immediately.

Having said this, I don't think we should meet T.B. (Thomas Brown) right away. Because I believe that L.R. should be at this meeting with us. Mainly because it would be worth it for him to be there when we finally speak to T.B. and of course to help authenticate anything he (Brown) might bring up during the meeting.

This situation also applies to your own presence here amongst us. However much impatience as my friend D. is subjected to throughout this stressful period, it might be better for everyone concerned if we waited a months or two so that L.R. can be properly briefed and studied-up on the subject matter before the meeting. Your trip back will be that much more beneficial to us, and in the long run,- we will end up gaining time on the complete project timeline instead of loosing it on the front end for lack of a proper preparation period..

In regards to T.B.'s eventual trip to Europe, (if by then he hasn't already been culled by Douglas or anyone else).(literally translated: -if he hasn't had "a make-over" by Douglas Aircraft) I suppose we will find out later.

As you've already mentioned, I believe this project will not remain exclusively ours to pursue because I know men of science and regardless of their national allegiances, -they have an irresistible urge to talk to each other about science. This unavoidable exposure of our hard earned research must be a "controlled situation" if we wish to hold our lead in the development stage of the project. We need more time. I will be in Ottawa at the **AGARD** from the 10th to the 16th June (see attached PDF) and I'll be there with Roy, and Perez and others. This will have to be a "Diplomatic Effort" and we have to be sure to avoid aggravating some very important people here..

It's best for you to keep in touch with T.B. -And tell him we want to prepare the way for him to come to France so that he can have a more successful experience in negotiating any future agreements. Tell him we are busy getting things prepared for him and that we will be ready soon, but don't make any commitments on the date.. Try not to make any distinctions between "static" and "dynamic" research efforts that we may wish to pursue with him in the future.

Now let's concentrate on the date for your eventual trip to France with T.B.. When would you suggest we proceed with the trip,-provided we are ready on our end with L.R. and the pending AGARD meeting in Ottawa.. Remember, -all of this also has to be coordinated with our pending document research on the matter.

Can you specify the nature of an eventual "static" application of the technology?

As for the need to notify our Diplomatic Scientific Attaché, I imagine we will have to tell him some day in the future, but not right away.

Again, -thank you and please accept my most cordial greetings

F. Vinsonneau

Point Pleasant Pa.

9th of Avril 1956

Dear Mr Visonneau

Please forgive my delay in writing to you , for I have been caught up into the **Vertol** Project.

Montgolfier

I saw B. (Brown) and M. (Moore) in Washington. Brown was thrilled with his visit to England. (with the English) He was particularly thrilled with **MOS** (Ministry of Supply*) . Brown thinks that they understand more about this than he does. Brown attended a banquet meeting with the **A.S.** (air Staff *) Brown's own words were '***After diner they tried to pump me with no success for I do not drink'*** (written in English). He has been invited to return to England and mentioned that he would be leaving in about a month. That is all he wishes to say about it. He said they were basically OK with the patent issue and he told me he would send details on the actual wording of the patents at the beginning of the week.. He has asked us to decide to accept the agreement that we have discussed, because he wants a commitment in case we decide to try and make modifications. He insists on the issue of not releasing these patents in the public domain.. Here (in the US) there is a special category of patents which is not for public release. He would like us to try and file the patents in a similar category of documentation. Brown is still thinking about his collaboration with D. (Probably 'Douglas Aircraft'), and his trip to California. There is where we will meet and he will give me information about his past experiments. However,-if he goes to England in a month, I don't understand how any of this will be possible I'm wondering how all of this will materialize by itself.

Symposium at M.I.T on Orbital and Satellite Vehicles

I am sending you the enclosed course curriculum for a summer program on this subject matter. Please note that they will be speaking about advanced 'avant-garde' propulsion techniques.

Clearances for our missions

I would like to inform you that we still have not obtained our official security clearances for the **Delière**** project . They still have not arrived in Washington. Our request for clearances from Thomas

Fleuriel which were transmitted to the **D.T.I.** (see***) on the second of February ,-were not received by Washington until the 20th of March. The ***Air Attaché's Bureau*** had sent the request promptly however they never received a proper response by American Officials.

***Ministry of Supply:** See *List of Abreviations* in the book: *Westland and the British Helicopter industry 1945-1960*

*** **Possibly**: something to do with J.Girard, M. Delière, see; Journal: Aircraft Engineering and Aerospace Technology **1950** Volume 22 ISSN 002-2667*

**** **Possibly** the **Defence Technical Information** center.*

END OF THIS 125 page DOCUMENT PACKAGE

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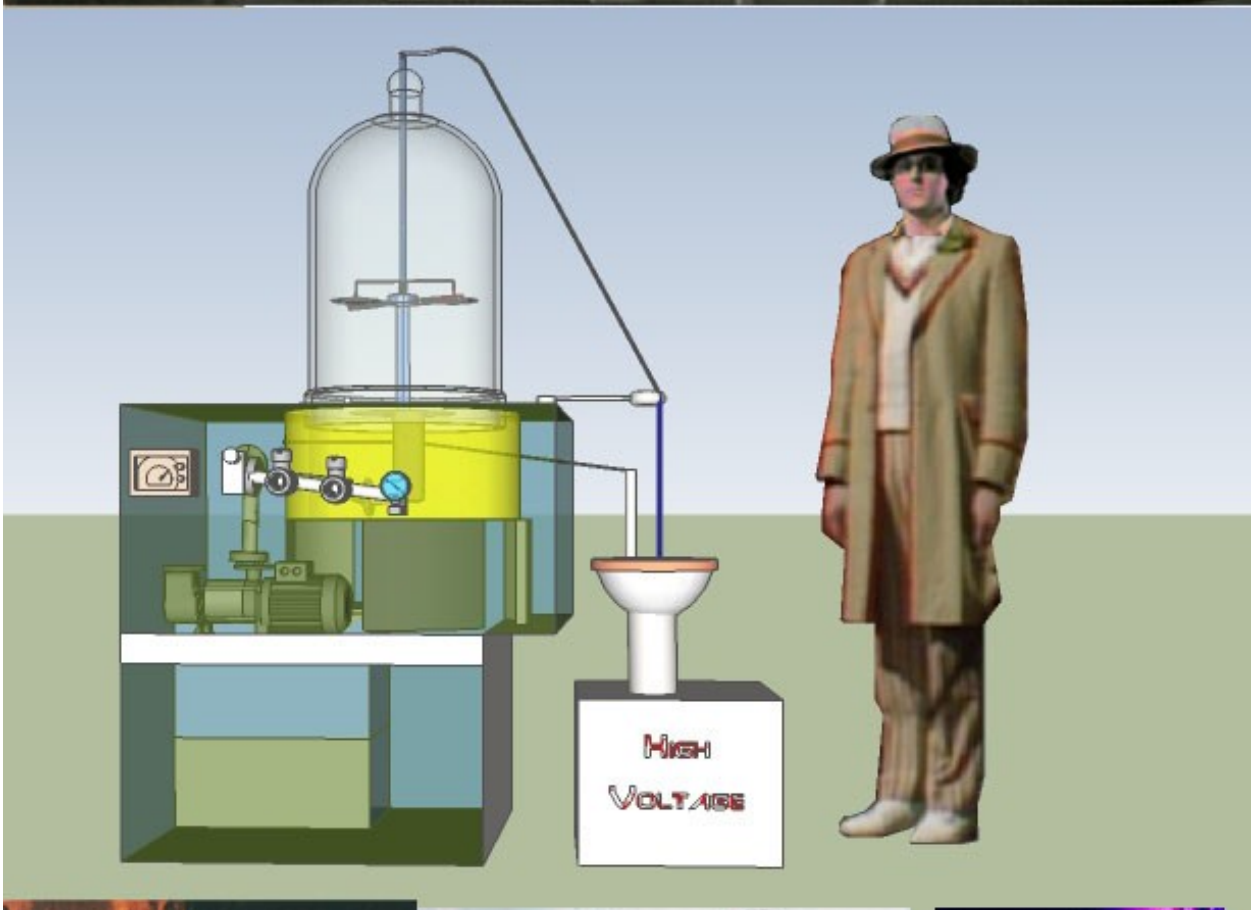

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