rexresearch.com

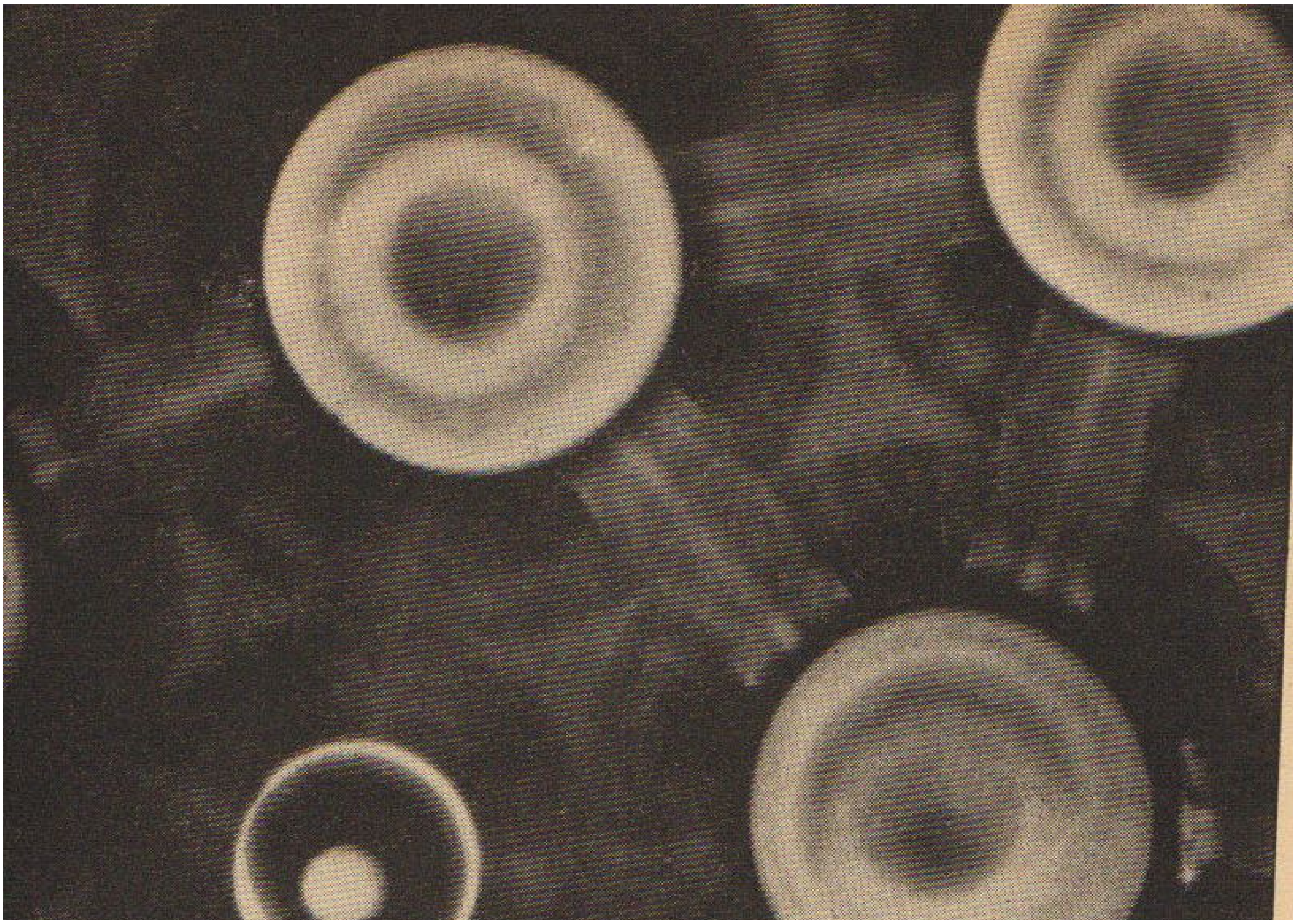
Elmer NEMES

The Nemescope

Science and Mechanics (January 1964) ~

"First Photos of the Atom!"

by David Legerman



REMARKABLE resemblance to Rutherford model of the atom is shown in this photo of iron atomic and molecular grouping. Note "energy lines" extending from atoms' nuclei.

A revolutionary new scientific instrument has been invented that penetrates to the heart of matter, the atom, and photographs it in color!

The incredible microscope is called the Nemescope, and it is the culmination of years of research by Dr. Elmer P. Nemes, a 44-year-old Hungarian-born physician presently living in Beverly Hills, Calif. Prior to the development of the Nemescope, the most powerful magnifying instrument known to science was the electron microscope. But this has several drawbacks, not the least of which is that it produces black-and-white or grey shadow photos with very little internal structure shown.

The electron microscope has an effective magnification of about 60,000X which can be furhter magnified photographically. However, there is no penetration of the structure of the examined material; nothing can be seen inside the surface. The Nemescope, which uses a ray of much shorter length than the electron, possibly below even the neutron range, gives beautiful penetration and resolution of internal structure.

The new microscope costs a fraction of the electron microscope and requires specimen preparation no more complicated than that required by a simple optical microscope. In addition to producing photographs of sub-atomic structure in color, the Nemescope can also project the image on a screen or reproduce it via television.

The secret of the Nemescope begins with the theory that if you can cause radiation of any substance, it will emit an image that can be converted to light, magnified, and photographed in color corresponding to its spectrum characteristics. Any solid, liquid, or gas could be excited by radioactivity in this manner and would respond by emitting at its own resonant frequency an image in true color, form, and spectrum.

Working on this theory, Dr. Nemes constructed his first model, a tank-like case shielded with lead that was a maze of knobs, wires, pipes, and cables. At first all controls were hand-manipulated, but the Nemescope is now ready for electrically driven controls with motors that have recorded movement intervals of 1/75,000th of an inch.

A full explanation of how this remarkable instrument works would take many pages (it includes more than 20 original patents) but here is a brief outline:

1. The first unit is a cold cathode lamp with multiple units separately charged. The filaments are preheated by an input of 18 volts amplified to 608 volts at the emitting end. This cathode gun acts as the primary source of illumination and bombarder of the specimen to be examined.

2. The second unit is a condenser under vacuum with molecular nitrogen injected. In the condenser circuit are placed two radium guns each yielding 5,400,000 electron volts. The condenser includes a coil which carries by interchangeable switch from 240 megacycles to 35,000 megacycles in magnitron arrangement which hits the specimen to agitate or excite the molecular structure.

3. The resulting stream of energy is converted into light in the front orthicon tube, actually consisting of two tubes which pick up resonant frequencies in the high ranges. After amplification, the imaging orthicon emits a picture on the screen in color corresponding to the nature of the substance under examination.

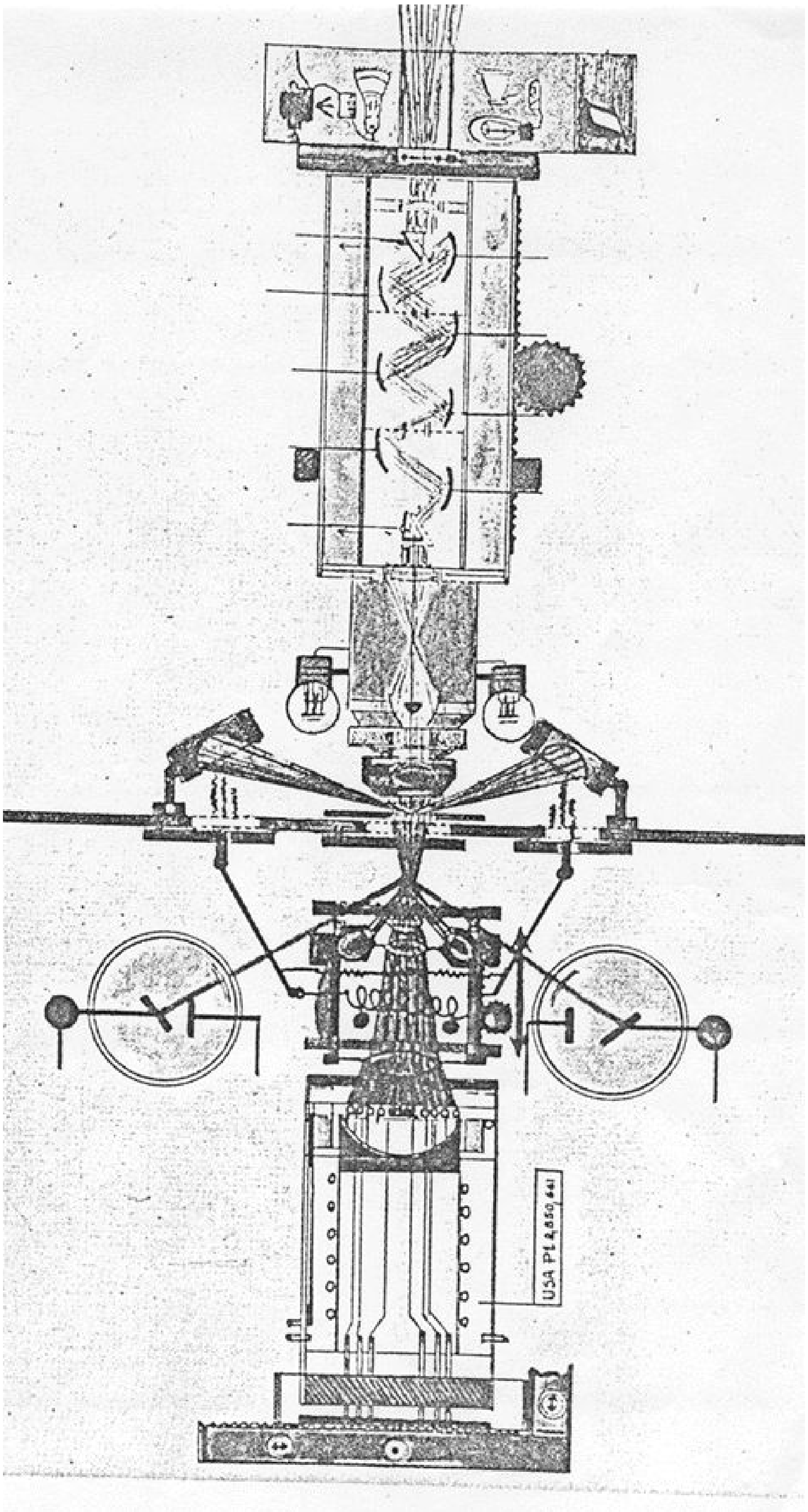
Results obtained with the Nemescope have been no less than astounding. In 1955, working with patients in the hospitals of Mexico City, Dr. Nemes succeeded in making pictures of cells from the blood and urine of cancer patients which established a relationship between human cancer and a virus.

In 1957, enzyme battery research started by Dr. Nemes resulted in another breakthrough when for the first time enzymes were resolved under a microscope. Through the Nemescope enzymes can be classified and identified. When we realize that enzymes are the chemical catalysts of living matter and that viruses share with bacteria the responsibility for most infectious diseases, a microscope that will enable man to study more closely these ultra-microscopic substances is indeed a boon to mankind.

Another exciting discovery made by the Nemescope is in the field of metallurgy. Behavior of metallic alloys under bombardment by the Nemescope has indicated that the present makeup of widely used alloys must be revised and new techniques developed to insure more stable bonding elements. Where the electron microscope showed perfect molecular alignment, the Nemescope photos showed fault lines and distinct weaknesses among bonding elements.

Metal failure of hull welds or pipe welds may have been the cause of the sinking of the "Thresher". It's obvious that a closer look at the behavior of metals in the atomic or molecular regions must be made. The Nemescope, with its great magnifying and resolving powers, will probably furnish the answers to these questions, as well as the answers to how materials behave when exposed to vacuum, ions and electrons, and the electromagnetic radiation known to exist in outer space.

Nemescope photos of the structure of the atomic nucleus are beautiful in their resolution. Perhaps the most surprising and exciting sight is how the atomic particles are connected by "force lines" or bands of energy. Nemescope photos of sub-atomic structure have an amazing similarity to Rutherford models of the atom --- those three-dimensional models of vari-colored balls held together with pencil-thin rods. Leukemia particles and the common cold virus, when photographed by the Nemescope in full color, have a precision in structure that can, perhaps, be appreciated only by a research scientist or laboratory technician.



MAGNETS In Your Future (1986) ~

"Remarkable Nemescope Made Living Pictures of the Micro-World:

by Tom Valentine

The inventor of the Nemescope was a brilliant brain surgeon. His name was Elmer P. Nemes and he ran the Nemes Research Laboratories, 4207 West Third Street, Los Angeles, California during the middle 1950's. Unfortunately, he was also an alcoholic. He was killed in a drunken brawl in San Diego in the early 60's --- he had hit rock bottom, and stayed there.

His invention, the Nemescope, which we are detailing on these pages in an effort to entice others to recreate this vitally important work, was stolen from a store called the Bryn Camera Shop on Melrose Avenue in 1957, ending a remarkable series of experiments and demonstrations. The device was in the shop to have an electric field finder installed.

The person responsible for revealing this story to me is the grand lady of health and nutrition, Betty Lee Morales, 80, a long time resident of Topanga and an individual with unbridled curiosity who has been involved in thousands of research projects during her lifetime. She and her husband were directly responsible for the remarkable photographs from the Nemescope screen, that you see on these pages, and her incessant curiosity spurred the inventor to extra efforts.

"We lost track of the stolen machine in New York," Betty Lee explained, "and the technology has lain dormant all this time."
Who stole the machine? What role did the secretive segments of the United States government play? Betty Lee herself was involved with the Central Intelligence Agency in its earliest years after WWII, and while representing Dr. Nemes she worked directly with the late Congressman Craig Sheperd of San Bernardino, who had arranged a major appropriation for in-depth and clandestine research on the Nemescope just prior to its theft and subsequent disappearance.

The photographs in this issue were taken directly off a 12-foot by 12-foot screen where the images danced energetically in full color. The Nemescope projected motion pictures of the micro-world onto the screen. Every object, in a medium of distilled water on a quartz slide, projected it's own natural colors --- no dyes were needed. The photo on the opposite page, for example, is a picture of molecules of iron nucleate from the juice of a Jade plant, squeezed for the filming experiment on the spur of the moment by Betty Lee. The iron nucleates were linked together with a sparkling, vibrant energy that formed patterns on the screen as the living juice was photographed and projected.

"The flowing lines of force were clearly visible and very symmetrical," Betty Lee explained, "but later, when the life forces in the juice evidently died, there was no energy. The emissions of energy were silver and gold luminescent and traveled, apparently at the speed of light."

The Nemescope photos and explanations on these pages speak for themselves. Now, how did these pictures come about?

Nuclear magnetic resonance had been firmly established a few years before Dr. Nemes began his experiments with "radiation potentials, wave lengths of emitted quanta and color spectra."

Here is Dr. Nemes' summary of the invention:

"The specimen which is to be examined by the multiple source microscope, is bombarded, for example, with two sources of energy. One of these sources is energy at a frequency which approximates the frequency of one of the radiation potentials of the material forming the specimen, and the other source produces energy at a frequency which is slightly different from the first frequency.

"The energy from the first source impinging upon the specimen causes the atoms to be excited and to emit quanta of energy of a frequency which is dependent upon the frequency of the energy of the first source. The energy from the second source serves to spread out the frequency of the emitted energy over a range of frequencies so that a colored light effect is produced. The colored light effect, which is a highly magnified image of the specimen being examined, may then be photographed.

"If desired, for photographic purposes, the spectrum which is emitted by the specimen being examined may be intensified by ultra-violet or visible light, comparatively long wave radiation. This combined light pattern is then enlarged by a conventional optical system and projected on the screen or some other suitable device and the composite is photographed by a camera."

Betty Lee's description may add to our perspective. "The device was an emission-type microscope --- it depended upon resolution, not magnification. An electron microscope might get to 16,000X in magnification, but not have much resolution. You can compare the images of a gold grid taken with an electron microscope and with the Nemescope

(Photos on page 28). We projected images that were 5 million X."

Betty Lee's recollection of the key feature of the device is as follows:

"Dr. Nemes designed a radiation gun, which was the essence of the machine. I recall that it was a steel pipe about 2 inches in diameter and about 10 inches long. Holes were bored in it and semiprecious stones, or jewels representing a different wave band were set in the pipe. The jewels had to be imperfect (see item 6 of the inventor's own summary coming up), so we heated them in an autoclave up to 5,500° F to cause imperfections."

According to the Nemes papers, US Patent # 2,850,661 covers the first unit of the "short and long wave radiation system," that he had devised. The inventor summarized the principles of his Nemescope in August of 1956, and submitted an amendment to his patent application, which had been filed in July 1955.

The summary will be first printed verbatim, then his comments, unfortunately without accompanying drawings, will also be verbatim.

1. The first unit is a cold cathode tube (lamp)(US Patent 2,850,661) with multiple filaments directly but separately charged. The filaments preheat the platinum, gold, germanium and tungsten targets. The function of this invention is explained in "Additional Claims on Lamps, Cold Cathode Tube, Reissued to United States Patent Office to Patent 2,850,661. The cathode gun acts as the primary source of illumination and bombarder of the specimen.

2. The second part of the instrument, which is called the long and short wave high frequency condenser, contains high frequency coils, quartz window, filters and radioactive emitters, electrostatic or electromagnetic coils, and also quartz prisms or lenses to focus the relatively long wave rays.

3. When the specimen is bombarded with a multiple source of radiation and the proper excitation potential arranged, the organic or inorganic matter emit an ultra-spectral image in true colors. Concerning the molecular structure, diffusion, cohesion and wave length of the examining matter, the rays can be arranged so that the primary source of radiation, by adjusting the condenser by wavelength or potential, will induce the appearance of the true image.

4. The radioactive emitter or gun maintains a radium filament with individual filters for Alpha, Beta and Gamma rays. Also we could use, if so desired, isotopes such as carbon 14, cesium and cobalt. The Gamma ray could be emitted also by interchangeable extra tubes. The radium crystals and other isotopes also can be melted into the quartz condenser lens.

Furthermore, shields of very thin plates of gold, aluminum or platinum can be used to control the radiation.

5. The specimen is under a quartz cover slide, or in the cases of gases or liquids, is in capillary attachment, emission attachment or between mica plates or other transparent useable material. The specimen also could be examined by the capillary system across high voltage and temperature changes could be measured indirectly concerning the examined specimen.

6. Pick-up unit: Fine grain fluorescent screen is incorporated to a system of optically corrected quartz lenses, thereby the invisible radiation can be picked up and transferred to longer rays. The lens could be coated with evaporated metallic silicate, aluminum, magnesium, boron, etc., with the mixture of the impure sphalerite single crystals, activated phosphides of zinc sulphide, zinc cadmium sulphide, etc. If the pick-up quartz or diamonds have impurities such as single microcrystals of metallic silicate, phosphides of zinc sulphate or zinc cadmium sulphate, these impurities act as fine grain fluorescent material. In that case the resolving power could be increased by such fluorescent impurities that the single crystals or particles act not only as a fine grain screen but as individual 360° emitters and resolution is theoretically unlimited and the magnification increases in proportion. Therefore a single molecule can be picked up individually and reproduced by spectrum and lines and structure. The single image is directed by focusing plates or prisms to the reflectors, mirrors, or single or double prism system and through this setup only the preferred image will be picked up by the image amplifying tube.

7. The amplification system contains: (A) deflecting cathode, (B) deflecting prism, adjustable by axis. In the amplification system the amplifying units contain concave shaped cathodes and plates, silver or rhodium coated, where not only amplification but further magnification can be obtained. The plates relative to the cathode are more positively charged.

The amplification units can be individually separated by perforated mica sheets (See drawings) and further correction of the image can be maintained with secondary and tertiary correcting screens. The final image is directed to the prism and reflecting system.

8. Additional interchangeable filters can be incorporated to filter out undesirable rays. Skiatron or equivalent color sensitive projecting tube is indirectly energized. Additional lenses can be added for different types of projection. The previously mentioned amplification unit, if further magnification or amplification is desired, can be repeated.

Technically and theoretically, by this system, resolution depends on the wavelength of the selected short wave radiation sources and the ultramicroscopic size single crystal-screen. Magnification of such is unlimited and the instrument is able to maintain images in full color and spectrum.

Following that summary, Dr. Nemes wrote of his "additional claims on lamps and the cold cathode tube." His comments may serve to further our understanding of the technology.

(A) Multiple illuminator filed with the US Patent Office in 1955 (Docket No. 2470 in 1955 by Harris, Kiech, Foster, etc., Patent Attorneys. Ser. No. 540,740, Oct. 17, 1955. Illuminator. Mailed Aug. 9, 1956) Claiming that the continuous flow of energy can be maintained by creating an ion differential between two poles of different materials (metals, gases and some other elements) which exhibit the K factor, as Boron, Magnesium, Tungsten, Titanium, Wolfram, Beryllium, Krypton, hard Carbon, Zirconium, Gold, Platinum, Nickel, Aluminum Sulphate, etc.

As stated in the Work Book, page 47, (between July 11 and October 10, 1955) a chain reaction takes place and maintains a continuous electron flow or shorter ray flow after preheating the cathode with an electric current. The two elements involved have different behavior and charge. (Ref. page 42; *Merk Index*: listed 55 different elements possessing the K factor, as possible sources of continuous energy production plus a second element, Magnesium, Aluminum Sulphate, etc., and maintain the flow without any further charge.)

On page 50 of the same Work Book, the inventor shows a drawing of a Magnesium coated Platinum cathode, energized by a Zirconium arc. A continuous flow of energy was produced even after the electric current was cut off. This setup was tested in October 26, 1955. The enclosed picture from the next page shows schematically the principle of the cold cathode tube.

The drawing under M 2599, October 26, 1955 explains the working of the principle by using a set of multiple cathodes and anodes that can be adjusted to different distances of the emitters. Therefore, a chain reaction, which can be adjusted to various frequencies, takes place without further use of external energy. Drawing No. 13351, Fig. 1 and 2 show the construction of the instrument.

Said patent application mentions also a gas inlet to the chamber through which various gases could be injected as Argon, Helium, Nitrogen, Xenon, Hydrogen or combinations of such. These could create the same effect as the various coatings of Magnesium, Boron, Aluminum Sulphate, etc.

(B) In the construction of the Nemescope the incandescent energy source was used further only to create a broader spectrum since the cold cathode radiation was tested as to its efficiency without the combination of the primary charge. The presence and maintenance of the chain reaction was proven as existing between cathode, anode, and grid without the primary energy source.

The cooling coil as reported in the cold cathode tube served the purpose of prolonging the life of the filaments in the tube. Our setup with the special arrangement of the targets proved to be capable of keeping the temperature slightly above room temperature, whereas, otherwise the temperature would rise to 100°C or higher.

Nemescope Additional Claims ~

In Patent 2,850,661, Paragraph 39: "It is preferred that the target be made of platinum or other material having the property of absorbing oxygen as its temperature increases and giving off oxygen as its temperature decreases. The absorption of oxygen by the platinum when the platinum is heating up produces a cooling action in the surrounding atmosphere and materially reduces the operating temperature of the filaments of the lamp." An essential factor in the cooling process was therefore achieved through the basic nature of the targets and their arrangement.

In the Nemescope the principle of the cold cathode tube has existed for several years and has been called "black body energy." The targets (cathode) energized through indirect heating by the Zirconium arc, consisted of gold and platinum, tungsten, germanium, etc., and were different in weight (ratio 1.5; 1.01). The Grid consisted of 2 antennae and one rhodium-coated concave mirror in an electromagnetic field, directed the cathode rays to the center of the beam going through the axis of the specimen.

In the patent of the cold cathode tube No. 2,850,661 is also demonstrated a rhodium coated concave mirror behind the target and the filaments arrangement which serve a double purpose:

(1) to focus the visible ultraviolet rays, etc., to the center of the spectrum and (2) act as a focusing grid for the cathode rays.

Finally, in 1959, two years after the prototype unit had been stolen, Dr. Nemes was encouraged by Betty Lee and his other partners to write a "construction guide" for his Nemescope. We now reprint the complete documentation for the first time:

"The multiple frequency source called, "Cold Cathode Tube or Lamp," (A) contains a radium SH and platinum plates S'L & SL. The wavelengths of the gun become ineffective long before they reach the specimen, but they do modulate the carrier frequencies composed of shorter wavelengths of light radiations. The low frequency light is obtained from filaments H1, H2, H3 heated to incandescence by 110VAC. The heat produced by this incandescence is used to indirectly heat the gold and platinum which starts a reaction between each other. This is self-sustaining, once started.

"These gold and platinum sources must be adjustable. It is suggested, that they be mounted on screw-mounts, the heads of which have a 90ø arm with magnetic tips, to be turned magnetically through the glass envelope of the cold cathode tube. To reflect most of the radiation of the chain reaction between the gold and platinum plates, a coated concave mirror Mfoc is placed behind the filaments. The focal length of this mirror is to be such as to focus correctly to the suspended quartz lenses FL1 in the condenser. This mirror may be compared to the cathode in the somewhat similar cathode ray tube, hereinafter referred to as CRT. Therefore it is to be negatively charged or at 0 reference potential. The subsequent elements are the intensity control G1 and the focusing grids or anodes.

"At the radiating end of the cold cathode tube a window of quartz maintains the low vacuum within the cold cathode tube. The function of subsequent quartz windows QzW1 through QzW5 is similar. The presence of the following gases is suggested: helium, argon, nitrogen, xenon or a mixture thereof. The radium gun, opposite the cathode reflector CREF emanates Alpha, Beta and Gamma radiations, comprising the higher frequencies.

"The structure of the cathode is as follows: if the structural metal of the cathode is tungsten, molybdenum, platinum, gold, a plating of rhodium, magnesium, aluminum or beryllium is suggested; the object being to make the sum total molecular weight of the structural and coated metal as high as possible, keeping the ratio of molecular weight as low as possible with the coating having the lower molecular weight.

"The focusing coil Lfoc and the deflecting plates of gold and platinum Adef1 and Adef2 help insure focus. The mass of the deflecting plates is not altogether critical, but the ratio of masses is critical in that it must be a ratio of 1.01 of gold to 1.5 of platinum.

"Between the cold cathode and the next component, the condenser "B", a slot must be left open to allow the insertion of interchangeable filters. These consist of four different types. First, a gold and silver leaf (a thickness of 1/10,000th of an inch), transparent filters; third, an infrared filter which can be constructed of carborundum, or any other suitable material; fourth, a blue filter. It is advised that these be structurally supported by quartz on both sides, and that these be mounted on a motor-driven circle which has one position for a neutral filter, composed of either nothing or black carbon.

"Since it is desirable to obtain variable resolutions and since resolution is directly governed by the wavelength of the radiation passing through the specimen, it is necessary to vary the wavelength. This can be most easily done by modulating the constant wavelength radiations of the cold cathode tube with a wavelength from an electronic oscillator.

"For this purpose a coil Mmod has been constructed 90° to the radiation beam. There are plates appropriately connected to this coil which seem to act as deflecting plates for the shorter wave length radiations.

"There are also focusing lenses mounted adjustably to focus the radiations. All optical components must be optically corrected. If these lenses are radium impregnated, the radium guns would no longer be necessary.

"The coating of the lens of the gun can be of any suitable radioactive material or isotope which emits Alpha, Beta and Gamma radiations. These are otherwise necessary because the effective range of Alpha, Beta and Gamma rays is only 3.9 cm if unaccelerated artificially. Around the assembly of the cold cathode tube and condensers must be constructed a radiation shield of lead approximately 1/8" in thickness.

"After the shield, the sample slide can be inserted. This slide must be of quartz glass, or some other material more pervious to short wave length. Here are also mounted two high frequency parabolic antennae to radiate the electromagnetic frequencies from the oscillator. These antennae are encompassed radially (only) by focusing coils.

"Close to the axial center of the radiation beam, yet outside the beam itself, should be mounted one or two small (1/4 watt) fluorescent bulbs If1. The output of these is not critical, for through the amplification of three x 1,000,000 their wavelengths become strong enough to project the image to almost any distance.

"The next unit called image amplifier, "C", contains first some gold and platinum deflection plates Adef3 and Adef4 and then a quartz prism P1 unto which the beam is focused by the focusing lenses FL2.

"The optical system components can be made of either quartz or commercial diamond. The quartz must be coated with metallic silicates, phosphides, etc. The commercial diamond must be electrostatically charged so as to procure current amplification due to the inherent impurities in commercial diamonds. This electrostatic charge has to be in sequential order of positive-going electrodes in reference to ground; to avoid repelling the radiation beam. The reverse side of prisms P1 and P2 are to be mirror coated with conventional materials. The focusing coil Lfoc in the vicinity of prism P1 should be adjustable as well as all other focusing coils; that is they are to be constructed so as to permit axial movement.

"The dynodes D1 to D9, inclusive, are the amplifying electrodes between which a voltage of not less than 18 VDC is to be maintained. The curvature of the dynodes is to decrease successively from Dynode 1 to 9.

"The correcting screens Rs1 and Rs2 are to be constructed of mica or quartz which is to be perforated by electrostatic breakdown of the mica, across a spark gap. The holes on the two screens are to be located so that the beam which passes through a hole on screen Rs1 does not pass through a hole of Rs2. The screens are to be coated with suitable phosphorescent material, then activated by a radioactive source prior to installation.

"The screen Rs1 is to be positioned so that the beam will first strike the mica and then the coating. This screen is also to be located at a 90ø angle to the beam, half way between dynode D2 and D3. This screen is also to be located in the magnetic field of the second focusing coil in the vicinity of dynode D3.

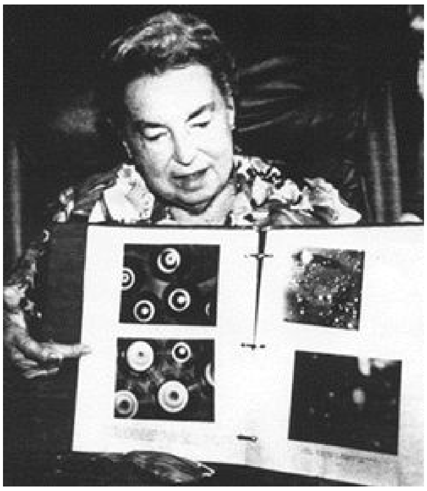
"The screen Rs2 is to be so located as to present the coating first. Prism P2 is to refract the beam from Dynode 9 through quartz window QzW5 and quartz filter QzFIL which is interchangeable much like the before mentioned quartz filter. The lens projecting system FL3 is to project the amplified image onto the screen.

"For further amplification, repeated stages of amplifying tubes can be used, the only limitation being the supply of voltage. After sufficient amplification, the image can be photographed from the screen, or directly from the instrument. For television closed circuitry, a camera need only be directed towards the image end of the image amplifying tube and either color or monochromatic television can be projected.

"It is suggested that no orthodox color tube be used for projection, but that one be used which has been modified with a radium gun directed toward the cathode of said tube, thusly the heater of said tube can be eliminated after having heated the cathode sufficiently. This is to achieve scale resolution finer than that perceptible by the naked eye."

It is in the interest of science and technology that *MAGNETS* has presented this feature. Should the Nemescope, or a comparable device be forthcoming because of this information, our ability to understand the universe around us will be considerably enhanced.

Perhaps we might even learn to focus and analyze variations in magnetic fields, thereby expanding our knowledge considerably.



Betty Lee Morales

Extraordinary Science (Jan/Feb/Mar 1991) ~

"Applications of Scalar Technology: The Liatronics Microscope"

By Dr Henry C. Monteith

Nearly every invention, machine, and device, which has been devised by man, interferes directly with life during their operation or produce byproducts which threaten the living biosphere of the earth. Unfortunately, the same holds true, to a large extent, for the two most recently discovered microscopes which have been named Scanning Tunnel Microscope (SCM) and the Atomic Force Microscope (AFM). Specimen preparation, together with the scanning techniques used, not only interfere with the dynamic processes inside the living specimen being examined, but also ignores the synergetic field interactions taking place between the atoms and molecules. Therefore, with these microscopes, it is impossible to study the atomic and molecular structure of living systems from a synthesized system point of view and to observe them dynamically interacting with their natural environment. A new microscope is proposed which does not have the aforementioned defects and which will open up a new era in the investigation of living systems.

Research and development of a microscope of the type discussed was carried out by Dr Elmer Pierre Nemes during the 1941 to 1964 timeframe. Unfortunately, he met with an untimely death and left behind research records which are both incomplete and severely lacking in detail. In addition to this, the microscope he invented utilizes physical scientific principles which have not yet been comprehended by modern science. All the recently developed electron microscopes are based upon the well grounded Quantum Theory which also thoroughly explains their principles of operation. On the other hand, the research carried out by Dr Nemes was not based on any comprehensible theory known to science and he left no record of the basic concepts he used a s a guideline, if any. There are, however, scattered bits of theory throughout the exisintg scientific literature which, when combined, shed some light upon the operation of the microscope which Dr Nemes built. For example, the theories of Faraday, Planck, Weis and Curie indicate that the emitted energies from a Black Body might span a region of negative spectral characteristics presently unexplored by modern science. The interactions taking place between metals of different electronegativities might produce energies operating in this unfamiliar region. Figure 1 shows a photograph taken by Dr Nemes of the atoms in a sample of jade plant juice. Notice the energy bands emanating between the atoms. The energy making up these bands exist in the negative spectral region and cannot be detected by any instrument which modern technology has produced. The Scanning Tunneling Microscope, for example, merely outlines the atomic topology at the surface of the specimen and yields absolutely no information concerning the energy interactions between atoms and molecules. The energy bands illustrated in Figure 1 are created by special modes of vibratory life energy which are peculiar to the jade plant from which the specimen was taken.

It was noticed by Dr Nemes and those working with him at the time, that as soon as the jade juice was taken from the plant, the life energy in the juice began to leave the atoms of the juice. When the photograph in Figure 1 was taken, the energy had already left the atom on the lower left to a large degree and it could be referred to as a ‘dying atom’. Thus, one observes that in the dying atom, the electron orbits have collapsed, the life energy around the nucleus has disappeared, and the energy bands between the dead and the live atoms have almost decayed. After the life energy leaves, the covalent bonds between the atoms still remain, the physical structure (or skeleton) of the juice is still in place, but the system can no longer function as a living, dynamic unit. The illusionary particles associated with this living energy are called "Litrons" and this is why the microscope has been called the "Litraonics Microscope" by the author of this article. The existence of the life-energy has been suspected throughout human history. A very ancient term for life energy was "Vril". Quite a thorough discussion of the Vril is contained in the 6th volume of the Arcane Teachings or Secret Doctrine of Ancient Atlantis, Egypt, Chaldea and Greece. The Hindus of India call the life-energy by the name of "Prana" and claim that through its use all human realization can be obtained. Finally, the most advanced researcher in the field refers to the life energy as "Scroll Waves". The point here, however, is that the Litraonics Microscope has the ability to make the modes of vibration of the Scroll Waves visible and it is through this that the microscope will make its greatest contributions.

The ability of a planet to support life is directly proportional to the concentration of this energy around the planet, its distribution, and its action inside the living structures inhabiting the planet. The microscope will immediately show that the ability of the earth to support life has been reduced by approximately 69% since 1900 due to the pollution caused by entropy-increasing technological devices, and the destruction of entropy-decreasing structures (such as trees) produced by nature. If this destruction of living systems does not cease immediately, the human race will no longer be a viable entity on planet Earth by the year 2050. The Litraonics Microscope is urgently needed to detect and prove the existence of life-energy in such a manner that it cannot be ignored. It will then become painfully obvious that man is committing suicide and, hopefully, he will take measures to stop this terrible act of ignorance before it is too late.

One can only guess the extent of the revolution which will take place after the development) or redevelopment) of the Litraonics Microscope. The revolution will extend into all scientific disciplines and in the following domains in particular:
(1) Colloid Science, (2) Metallurgy, (3) Biology, (4) Medicine, (5) Ecology, (6) Industrial Control, (7) Agriculture, (8) Theoretical Physics, (9) Chemistry, (10) Energy Production/Conversion, (11) Molecular Engineering.

Medical researchers will be able to study viruses in their living, dynamic state, actually observing them attacking cells with their unique mechanisms. Therefore, researchers will be able to more quickly and effectively devise methods to stop these detrimental viral actions.

Since we live in a world of illusion, it is necessary to establish that the Litraonics Microscope did exist and that the enclosed picture in Figure 1 was taken by that microscope. Dr Bruce W. halstead of the World Life Research Institute in Colton, CA actually saw the Litraonics Microscope (then called the "Nemescope") in operation on several occasions and even tried to promote its further development. He can be contacted for verification [deceased]. The following sources of information are available to help in the redevelopment of the Litraonics Microscope:

(1) Brief sketches of the research of Dr Elmer P. Nemes that were collected by Betty Lee Morales (now deceased). This includes a notebook of several microscopic views (in color) now kept at the World Research Foundation in Sherman Oaks, CA. This is proof that the microscope once existed and was able to produce extraordinary views of the atoms and an unknown energy interacting between them.

(2) An article published in the January 1964 issue of Science and Mechanics which shows a photograph of a part of the microscope (Figure 2).

(3) An article published in Magnets magazine (September 1986). This article was written using information provided by Betty Lee Morales and includes a picture of the microscope as artistically rendered by Dr Nemes (Figure 3). This drawing, however, is deliberately incomplete and can be misleading. The article is somewhat incoherent, contains only bits and pieces of information, and some misinformation. For example, it states that Dr Nemes was killed in a drunken

brawl in San Diego in the early 1960s. In truth, he died in a motel fire as indicated in his death certificate. At the time, he had in his possession several laboratory notebooks that related to the microscope but the author has been able to find no trace of them.

(4) Patent # 2,850,661 gives a considerable amount of information concerning the structure of the special lamp used with the microscope. The patent is qualitative and this is a measure of difficulty which might be encountered in its reproduction; however, the task is certainly feasible.

The Litraonics Microscope has been referred to as the "Multiple Radiation Source Microscope" which gives some hint as to the nature of its operation. All substructures of a living as well as inanimate material entity, from atom to the structure itself have resonant frequencies. To stimulate atomic and molecular resonances, it is necessary to generate and control frequencies from microwaves to gamma rays. It is in this that the real secret of the Litraonics Microscope resides.

A block diagram of the microscope is illustrated in Figure 4. The radiation source consist s primarily of the lamp described in Patent # 2,850,661; however, it has been modified to include an electron beam generator. A filtering system is set up between the Radiation Source and the Modulator. The modulator generates frequencies from radio waves to gamma rays which are mixed with the frequencies projected by the radiation source. These frequencies then effectively "impulse" the specimen and cause it to emit self-generated frequencies which are characteristic of its structure. The combined, modulated spectrum then enters the electronic multiplier and amplifier which in turn passes the spectrum to the image processor where information is extracted and a highly magnified image is formed. The image may then be projected on a screen, fed into a television camera or presented by other means.

In order to prevent the microscope from being stolen, Dr Nemes did not include a description of the generator which is absolutely necessary to make the vibratory modes of life energy visible. The author has rediscovered the secret of that generator and its scientific and technological nature is being kept secret until such time as funding can be found to reproduce the microscope.

The author believes that this microscope holds untold benefits for humanity and he is very anxious to redesign and build it again. Keep in mind that Nobel prizes have been given for the development of every new microscope this far. This shows how much significance is placed on the discovery of new microscopes by the scientific community. Indeed, such developments always expand scientific knowledge and open up new frontiers of research. Potential investors are invited to communicate with Dr Henry C. Monteith through the publishers of this article since he may be moving from his present address quite soon. --- HCM

US Patent # 3,129,353 (Cl. 315-40)

Multiple Radiation Source Microscope

Elmer P. Nemes

(April 14, 1964)

This invention relates to microscopes and more particularly to a microscope in which the specimen being examined is bombarded with energy from a plurality of radiation sources which produce different wavelengths of radiation.

In many instances it is desirable to examine both the internal and external structure of a particular specimen. Typical examples of such examination are in the fields of medical and microbiological research, metallurgical research, etc. In these fields, it often happens that the specimens which are to be examined are too small to be seem by the naked eye. Therefore, a suitable device, such as a microscope, must be provided to accomplish the examination. The microscope magnifies the specimen being examined to a degree such that worthwhile observations can be made.

Two examples of microscopes presently in use are the optical microscope and the electron microscope. In both of these types of microscopes the two criteria which determine their effectiveness are magnification and resolution. Magnification may be defined as the ratio of the size of an image formed by an optical system to the size of the object. The term resolution is most frequently used to denote the smallest extension which a magnifying instrument is able to separate or the smallest change in wavelength which a spectrometer can differentiate.

In an optical microscope the degree of magnification and resolution which can be obtained is limited by the physical properties of the lens system and also by the wavelength of the single beam of energy illuminating the specimen. The magnifying power of an electron microscope is limited by the size of the bombarding electrons. Most electron microscopes are characterized as having a magnifying power slightly greater than 200,000X. Actually, the true resolving power of the electron microscope is limited to about 60,000X, after which point photographic enlargement is employed. The photographic enlargement magnifies the image but contributes nothing to resolution. In fact, the photographic enlargement reveals the loss of resolution and increases distortion. Also, the magnified image produced by an electron microscope is in many instances only a shadow of the specimen being examined. The image appears in black and white and much of its detail is lost.

The present invention is directed to a microscope which is highly efficient and which overcomes many of the problems and limitations present in optical and electron microscopes. In accordance with the present invention the specimen being examined is simultaneously bombarded with energy from several sources, the energy being of different wavelengths. The system has high magnification powers and extremely good resolving powers.

Utilizing the system of the present invention, photographs have been obtained of the internal structure of viruses, such as polio, cancer, multiple sclerosis, muscular dystrophy, and also of toxins and anti-toxins developed by viruses. Through the resolution of internal structure, photographs of the internal structure of materials, such as aluminum oxide, germanium, magnesium and latex also have been obtained. It has also been possible to examine and photograph the internal structure of crystals such as quartz and germanium.

It is therefore an object of this invention to provide a microscope which has high magnification and resolution powers.

Another object of this invention is to provide a microscope in which the specimen being examined is simultaneously bombarded with a plurality of wavelengths of energy.

A further object of this invention is to provide a microscope system having a tube which produces a plurality of waves of energy of different wavelengths.

Other objects and advantages of the present invention will become more apparent upon consideration of the following specification and annexed drawings, in which:

Figure 1 is a cross-sectional, partially schematic representation of a portion of the microscope system.

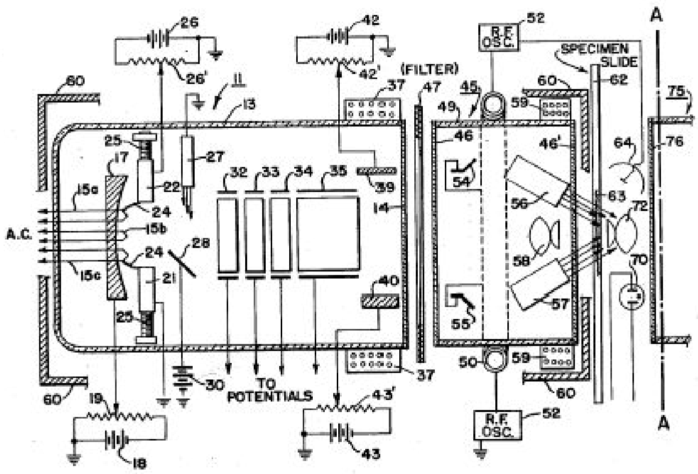


Figure 2 is a cross-sectional, partially schematic view of the remainder of the system; and

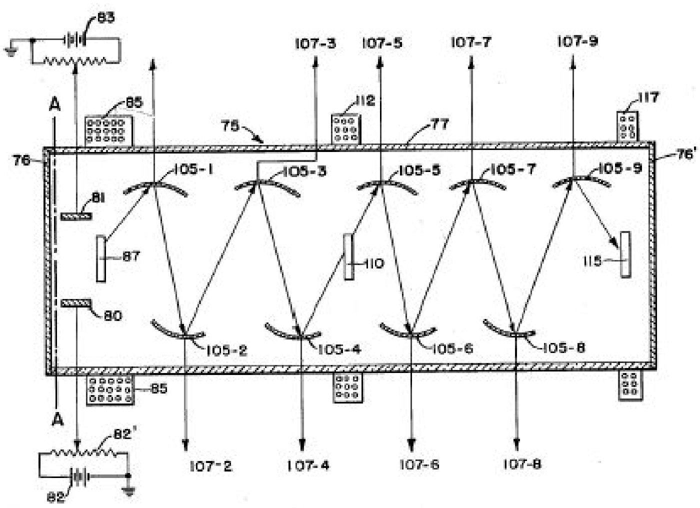
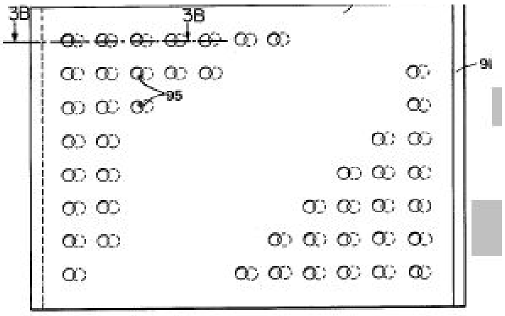


Figure 3A and 3B are detailed views of the correcting screens of the image reproducing tube of Figure 2.

FIG. 3A



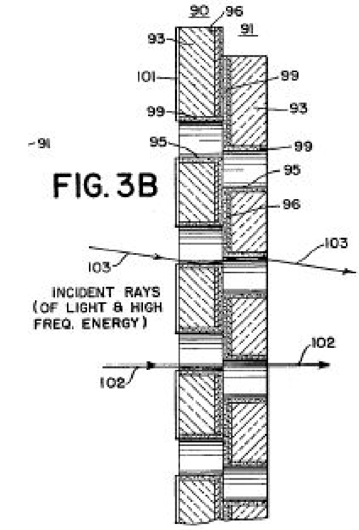


FIG. 3B

Referring to Figure 1, the first unit of the microscope system is the multiple radiation source tube, 11. The tube 11 is formed with a substantially cylindrical outer wall 13 which has secured to one end thereof a quartz window 14. The quartz window 14 is secured in such a manner that it is capable of maintaining a partial or very low vacuum within the tube 11.

Located within the tube 11 are a plurality of filaments 15a, 15b and 15c which are circularly wound and mounted concentrically on a suitable heat resistance form, such as mica (not shown). The filaments 15a, 15b, 15c are connected to a source of direct or alternating current potential, for example 117 volts AC. As the filaments are heated they are caused to give off light in the visible wavelengths due to the incandescent effect,

Located behind the filaments 15a, 15b, 15c is a concave mirror 17 which is used to focus the visible light produced by the filaments 15. The mirror is preferably made of a metal, such as rhodium. The mirror 17 may be compared to a shaped focusing electrode of a cathode ray tube. As shown, the mirror 17 is connected to a source of negative potential 18 through a voltage divider 19. As will subsequently be described, the mirror 17 serves as a focusing electrode due to this negative potential.

Located adjacent the mirror 17 are two electrodes 21 and 22 which act as a source of energy of higher frequency than the energy produced by the filaments 15. The electrodes 21 and 22 are preferably formed of materials which exhibit an electronegativity effect. In a preferred form of the invention, the electrode 21 is made of gold and the electrode 22 of platinum. These electrodes are connected to a respective filament 15 by means of a suitable connection 24. A reaction occurs between electrodes 21 and 22. This reaction is started by the heat produced by the incandescence of the filaments 15 and by a potential difference which is supplied from a suitable source such as a battery 26 and voltage divider 26'. Once the reaction is started it is self-sustaining. The nature of this self-sustaining action is an emission by the difference in electronegativity between the gold electrode 21, the platinum electrode 22 and the impurities contained therein. Briefly described, an electronegative element is one which has a relatively great tendency to attract electrons whereby the bond energy of its linkage with another and different atom is found to exceed the mean of that found in linkages between the two pairs of identical atoms.

In effect, the materials forming the electrodes 21 and 22 are also caused to emit electrons due to the thermionic effect produced by the filaments 15 and the electric field set up by the subsequent accelerating and focusing grids. The exact wavelength of the energy emitted by the electrodes 21 and 22 is determined by the type of metal used for the electrodes, the distance between the electrodes, the temperature applied, and the adjacent electric fields present. The wavelength of the energy emitted by the reaction between the electrodes 21 and 22 is shorter than that produced by the filaments 15 but longer than that which would be produced by alpha, beta, or gamma particles.

In order to have some control over the wavelength of energy produced by the electrodes 21 and 22 they are preferably made adjustable with respect to each other. In the preferred form of the invention the electrodes 21 and 22 have screw mounts 25 which protrude through the housing 13. The screw mounts are brought out through suitable seals in the housing 13 which maintain the vacuum within the tube 11. The electrodes 21 and 22 may also be mounted, as shown, on screws which have magnetic tips. These magnetic screws are adjusted from the outside of the envelope of the tube 11.

Due to the potential on the mirror 17 it also serves to focus the energy produced by the reaction between the electrodes 21 and 22 toward the output end 14 of the tube 11. This effect is well known, but no further description is needed.

A source 27 is provided to emit alpha, beta and gamma particles. The source 27 may, for example, be a radioactive element, such as radium or a radioactive isotope which is capable of emitting these particles. The particles emitted from the radioactive source 27 are directed toward a reflecting element 28. A suitable source of potential, shown by the battery 30, is connected to either the gun 27 or the reflector 28 so that the potential therebetween is sufficient to accelerate the alpha, beta and gamma particles to approximately 10 million electron volts. The spacing between source 27 and the reflector 28, the potential difference, and the shape of the reflector 28 are chosen so that the alpha, beta and gamma particles emitted by the source 27 are directed toward the window 14 at the end of the tube 11. Some of the particles and other radiation having sufficient energy will pass through the thin, transparent quartz window 14.

In a preferred form of the invention, the reflector 28is made of a suitable metal such as tungsten which is coated with molybdenum, platinum, gold, rhodium, magnesium, aluminum or beryllium. As a general constructional guide, the total molecular weight of the tungsten structural metal and the coating should be as high as possible and the ratio of the molecular weights be kept as low as possible, with the coating having the lower molecular weight. It should be realized that other arrangements may be utilized, if desired.

A series of accelerating electrodes, control grids, and focusing electrodes 32, 33, 34 and 35 are provided in order to accelerate, focus and control the energy which is emitted by the electrodes 21 and 22. These grids are connected to the necessary sources of potential (not shown) and are provided with variable control elements (not shown), if desired. Since such elements are well known in the cathode ray tube field, further explanation of their operation is unnecessary.

The radiation which is produced by the filaments 15, the electrodes 21 and 33 and the radioactive source 27 contains all frequencies from visible light rays up to the rays emitted by the alpha, beta and gamma particles. The wavelengths produced by each of the sources of energy modulates the wavelengths produces by the other sources so that the final wavelengths emitted by the tube 11 has the sum and difference of the wavelengths of all the sources.

Located at the end of the tube 11 adjacent the quartz window 14 is a magnetic focus coil 37 and a set of deflection plates 39 and 40. The focus coil 37 is connected to a suitable source of current (not shown) which is sufficient to provide a magnetic field on the inside of tube 11.

The deflection plates 39 and 40 are connected to sources of direct current potential, illustratively shown as the batteries 42 and 43, by respective adjustable voltage dividers 42’ and 43’. This arrangement provides the proper deflecting potentials for the deflecting electrodes 39 and 40.

In a preferred form of the invention, the deflecting plates 39 and 40 are respectively made of gold and platinum, the same materials as the electrodes 21 and 22. While it is not necessary to have the specific materials mentioned for the plates 39 and 40, it is desirable to have two metals with differing electronegativity. For best operation of the tube 11, the metals forming the deflection plates 39 and 40 should be of the same material as those forming the electrodes 21 and 22. It has been found that by using the same material for the deflecting plates as used for the electrodes better control over the energy emitted by the electrodes 21 and 22 can be obtained. It is also preferred to use metals for the electrodes 21 and 22 and for the deflecting plates 39 and 40 which absorb oxygen with an increase in temperature and give off oxygen with a decrease in temperature. Many such metals exist and can be used. For a more complex description of this cooling effect, reference is made to my Patent # 2,850,661, which also describes some constructional details of the tube 11. As shown in the patent, the tube 11 may also be provided with with a cooling fluid by suitable cooling coils.

In order to obtain the best mode of operation for the tube 11, while the mass of the materials forming the deflecting plates 39 and 40 is not too critical, it has been determined that an optimum ratio of the masses exists. The optimum ratio is that of the two materials shown, wherein the ratio is 1.01 of the gold deflecting plate 39, to 1.5 for the platinum deflecting plate 40.

The focusing coil 37 serves to deflect the alpha and beta radiation produced by the radioactive source 27 so that it is directed out through the quartz window 14 after being accelerated in the tube 11. The gamma particles are undeflected by the coil 37 but these particles have sufficient energy to travel down the length of the tube 11 and leave through the quartz window 14. The deflecting plates 39 and 40 focus the energy produced by the electrodes 21 and 22 and have no effect on the alpha, beta and gamma radiation. As previously pointed out, by suitably charging the mirror 17 it can be made to serve as a focusing electrode for the energy emitted by the electrodes 21 and 22.

The tube 11 may be filled with a gas such as helium, argon, nitrogen, xenon, or mixtures thereof. Due to the energy produced by electrodes 21 and 22 and the potential difference therebetween, the gases in the tube are ionized and radiation in the ultraviolet spectrum, as well as ions are produced. This ultraviolet energy and the ions are also present at the quartz window 14. Therefore, as explained, the tube 11 is capable of producing energy encompassing the ultraviolet to the gamma wavelengths.

The multiple wavelength radiation is directed from the quartz window 14 at the output of tube 11 to the input of a condenser 45. The condenser 45 has an outer housing 49 with quartz windows 46 and 46' at the ends thereof. A slot is left between the tube 11 and the condenser 45 to allow the insertion of a filter 47, which is preferably interchangeable. The filter 47 may be any one of a number of types. For example, gold and silver leaf of a thickness of 1/10,000 of an inch; second, a transparent filter, such as quartz, third, an infrared filter constructed of carborundum or any other suitable material; fourth, blue filter. In a preferred form of the invention, the filters are supported by quartz on both sides and mounted on a motor driven wheel which has one position open for a neutral filter. The neutral filter is either an aperture in the motor driven wheel or else it is formed of black carbon.

Located around the outer housing 49 is a coil 50 which is supplied with alternating current at radio frequencies by a suitable radio frequency oscillator 52. The oscillator 52 produces a signal having a frequency between 200 and 30,000 megacycles. The frequency of the oscillator is preferably adjustable. The exact frequency used in any case is determined by the specimen being examined. Any of the well known types of radio frequency oscillators capable of producing oscillations at the needed frequencies may be utilized, the particular type forming no part of the present invention.

Connected to the coil 50 is a set of deflecting plates 54 and 55 which are located within the housing 49. The deflecting plates 54 and 55 are supplied with radio frequencies energy from the coil 50 and this energy modulates the appropriate wavelengths of energy from the tube 11. The resolution of the microscope system can be controlled within limits by varying the frequency of the modulating energy produced by the oscillators 52 and also by controlling the intensity of the signal produced by these oscillators.

Also, located within the condenser 45 are a set of lenses 58. the lenses are preferably of quartz and are used to focus the visible and ultraviolet light rays emitted by the tube 11. These light rays were originally focused onto the lense 58 by the mirror 17 which is shaped to have the proper focal length.

A pair of radioactive sources 56 and 57 are also mounted within the condenser 45. The radioactive sources contain any suitable radioactive material or isotope which is capable of emitting alpha, beta and gamma rays. The radiation emitted by the guns 56 and 57 is modulated by the energy from tube 11 thereby producing another range of sum and difference radiation frequencies.

For high resolution work the sources 56 and 57 are desirable. It is also possible to eliminate the sources 56 and 57 and instead coat the lens system 58 and the quartz window 46' with a radioactive substance which emits alpha, beta and gamma rays. The primary radiation from the tube 11 interacts with the radiation emitted by the radioactive substance coated on the window 46' and the lens 54 to produce a modulated spectrum of radiant energy. In general, the additional alpha, beta and gamma radiation provided by the sources 56 and 57, or the lens 58 and the coated quartz window 46', allows more minute structure of a specimen to be resolved.

Mounted around the outer housing 49 of condenser 45 is a focusing coil 59 which is supplied with energy from a suitable source. The focusing coil 59 serves a purpose similar to the coil 37 which is mounted around the tube 11, namely, to focus the alpha and beta radiation as well as the radiation produced by the electrodes 21 and 22 of the tube 11. As previously stated, the gamma radiation produced by the elements of the condenser 45 possesses sufficient energy and is suitably focused to impinge upon the specimen being examined.

As shown in Figure 1, the complete assembly of tube 11 and condenser 45 is enclosed by a shield 60. The shield 60 is made of a suitable material, such as lead, and is of a thickness to prevent any radiation from harming an operator who is in the vicinity of the microscope.

The specimen slide 62 on which the specimen being examined is mounted as shown at 63, is located adjacent the window 46'. The slide 62 is preferably mounted on a movable stage, whose distance from the window 46' can be adjusted. This provides additional control for the system. The slide 62 is made of quartz glass or other suitable material which allows short and long wavelengths of radiation to pass therethrough. In order to prepare a specimen for examination by the microscope, standard techniques are followed. For example, when a metal specimen is to be examined, the metal is ground into a fine powder which is held on the specimen slide 62 between two plates. When a liquid or gas is to be examined, the gas is placed within a suitable container. If desired, the gas may be ionized. It should be noted that the specimen slide 62 may be mounted within the shield 60 if the shield is provided with an appropriate opening.

An antenna 64 irradiates the specimen under examination with radio frequency energy. The antenna receives its energy from the oscillator 52, which as previously pointed out, is adjustable either continuously or in steps from 220 megacycles to 30,000 megacycles. The energy supplied to the antenna 64 has a relatively high intensity and is beamed directly onto the specimen being examined by focusing it with a parabolic dish or other suitable means. The energy from the antenna 64 has a relatively high intensity and is beamed directly onto the specimen being examined by focusing it with a parabolic dish or other suitable means. The energy from the antenna 64 serves to agitate the specimen being examined and enable it more readily to emit energy. The radiant energy from the antenna 64 also filter-modulates the energy bombarding the specimen being examined.

As can be seen, the specimen on the slide 62 is bombarded with energy from a plurality of sources having a plurality of wavelengths. Each of the wavelengths emitted by a specific source intersects with the other wavelengths and modulates it to produce sum and difference frequencies of energy.

According to the best theoretical explanation presently available, the microscope system operates as follows. As is well known, there are a certain number of chemical elements. These elements are listed on any periodic table. Every particle of matter, whether solid, liquid, or gas is composed of atoms of one or more of the chemical elements, and is either a mixture or a compound of the elements.

In classical cases, in which the Rutherford model of the atom is used, it is considered that each atom is formed by a nucleus carrying a positive charge about which revolve, in orbits, a number of electrons carrying negative charges. Thus, in the simplest case of a hydrogen atom, a single electron revolves in an orbit about a nucleus carrying a charge which is equal but opposite in effect to the charge of the electron.

It ahs been postulated by Bohr that an electron may revolve in one of a set of particular orbits, but not in any orbit, and that an electron has a specific energy for a given orbit. According to Bohr, when an electron in one of the orbits is supplied with energy from an external source it can be raised to another orbit. Going back to its original orbit, the electron emits a quantity of energy hv, where h is Planck's constant and v is the frequency of the spectrum line of the energy emitted. Hence when an electron of an atom is in its normal or lowest orbit and is given energy equivalent to the energy of the next orbit, the electron can be raised from the normal to the second Bohr orbit. When this is done and the electron is shifted from one Bohr orbit to another, it is said that the atom is excited or in an excited state. For example, when a hydrogen atom has its electron in the normal or first Bohr orbit, the atom is said to be normal, or in its normal state; when the electron is in the second Bohr orbit, the atom is said to be in the first excited state; when the electron is in the third Bohr orbit, the atom is said to be in the second excited state, and so on. The potentials necessary to knock the electrons of an atom from one Bohr orbit to another are known as excitation or radiation potentials, the frequency and the energy of the radiation potential being directly related.

When the electron of the excited atom falls back to the first Bohr orbit, a quantum of energy of a certain frequency is emitted. Thus by bombarding an atom with the proper excitation frequency, an atom can be made to emit a quantum of energy, the frequency of which is determined by its atomic structure and by the energy of the external source. The latter determines to which orbit the electron is moved.

Excitation potentials for different materials vary and are determined both mathematically and empirically. For example, the radiation or excitation potentials for the normal and first excited states for the hydrogen atom are approximately 10.2 and 12.1 electron volts. When the electron falls back to the normal orbit from the first and second excited states, quanta of energy having respective wavelengths of 1210 Angstroms and 1019.8 Angstroms are emitted. The radiation potentials and the wavelengths of the emitted quanta for other elements may also be calculated or experimentally determined, and many of these are listed in available handbooks.

In accordance with the principles of operation of the invention, the specimen which is being examined is bombarded with a plurality of sources of energy hv of different wavelengths. One of these sources is energy at a frequency which approximates the frequency of one or more of the radiation potentials of the material forming the specimen. The radiation is produced by a first source of short wavelength sources, such as the radioactive sources 27, 56 and 57. This energy is in turn modulated by energy from a second source of a longer wavelength, such as that produced by the filaments 15, the ionization of the gases in tube 11, and the oscillators 52. The energy from the short wavelengths radiation source impinging upon the specimen causes the atoms forming it to be excited, and emit quanta of energy of a frequency which is dependent upon the frequency of the first source. The energy from the second source serves to spread out the frequency of the emitted energy over a spectrum of frequencies. This spectrum of frequencies when translated to a lower frequency visible light occupies a band of colors in the visible light range. Therefore, the specimen being examined is caused to emit a spectrum of energy which lies within a certain range.

In order to describe the production of the visible range, reference is made to Figure 2 which shows one form of image tube used for this purpose. Located adjacent the specimen slide 62 is a small neon or fluorescent tube 70. The tube 70 has in it a gas which is ionized by the electromagnetic radiation emanating and spilling over from the specimen. The fluorescent tube 70 acts as a test lamp to tell when the system is operating by producing a visible light.

The modulated visible and ultraviolet light from the specimen as well as the higher frequencies of energy, pass through a lens system 72 to the image tube 75. The lens system 72 is preferably made of quartz or some other material and serves to pass the visible light from the primary source tube 11 after it has been modified by the other frequencies of energy present and by the energy emitted by the specimen. As is well known, quartz lenses can pass wavelengths greater than 0.19 micron. Shorter wavelengths of radiation, such as the alpha, beta and gamma waves and the shorter wavelengths radiated by the specimen pass around the lens system 72 to the image tube 75. All the radiation then passes to the internal components of the image tube 75 through a thin quartz window 76 which is placed at the end of the housing wall 77 of the image tube.

Located adjacent the quartz window 76 is a setoff deflection plates 80, 81, which are preferably formed of the same type of material as corresponding respective deflecting plates 39, 40 of tube 11. Deflection 80, 81 are connected to a suitable source of deflecting potential formed by respective voltage divider circuits 82, 82' and 83, 83'. Also located adjacent the window 76 is a deflecting coil 85 which is wound around the outside of the image tube 75 and connected to suitable source of focusing current (not shown).

The potentials on the deflecting plates 80, 81 and the current in the focusing coil 85 are so adjusted that these elements concentrate the respective wavelengths and particles of energy on which they are effective onto a first imaging producing and correcting screen 87. The screen 87 is mounted by any suitable arrangement (not shown) and its details of construction are shown in Figures 3A and 3B.

Referring to Figures 3A and 3B the screen 87 is formed by first and second sections 90 and 91, which are similar, but not identical in construction. Each of the sections 90 and 91 is constructed of a plate 93 which is preferably of quartz or mica with a plurality of holes 95 in it. The holes 95 are either etched, drilled or punctured through the plate 93 and their diameter should be as small as possible. In a preferred form of the invention, the plate is made of mica and the holes 95 are punctured by means of a high voltage arc. The holes 95 should be as close together as possible and a symmetrical, preferably line by line, arrangement is desirable. This is shown in Figure 3A.

The plate 93 is coated with a metal silicate 96 which is also punctured during the formation of the holes 95. A phosphor screen 99 is evaporated onto the plates 93 by any of the suitable techniques well known in the field of forming cathode ray tube screens. During the evaporation process, the phosphors also deposit on the inside of the holes 95, but do not block the holes. The phosphors utilized for the screen 99 are a mixture of those phosphors which would normally emit the full color spectrum, as determined by the primary emission or the complements of these colors. As is well known, the color of light emitted by a particular phosphor is dependent on the wavelength of the energy impinging upon it. This is shown in any pertinent reference text. Suitable phosphors may be selected to suit a particular application or specimen being examined, it having been determined that each specimen will emit most strongly one frequency of energy or narrow band of frequencies. The phosphors are selected to maximize the reproduction of this frequency or band of frequencies. Mixed in with the phosphors forming the screen 99 are radioactive particles which emit alpha, beta and gamma rays which serve to sharpen the reproduced image. If desired, the phosphors are baked over with gold or silver for physical support.

The first section 90 is turned as shown in Figure 3B toward the direction of the incident rays of energy coming into the image tube 75. The quartz plate 93 is covered with a black matte coating 101 which is semi-transparent. The second section 91 of the screen is reversed with respect to the first section and aligned, either directly on top of or spaced slightly therefrom, so that the holes 95 have only their edges overlapping (see Figure 3A). An arrangement such as this may be readily accomplished, simply by puncturing the holes for the plates 93 of the first and second sections at the same time and then shifting one plate with respect to the other to achieve the desired hole arrangement. For best resolution of the finished picture, the overlap between the holes 95 of the first and second sections should be made as small as possible thereby forming only very narrow slits through which any radiation can pass to the remainder of the tube.

To illustrate the operation of the screen 87 consider several incident rays of energy, shown in figure 3B. The ray 102 is in line with a slit formed by the overlapping of two holes 95 and passes therethrough. Since this is the case, the ray 102 is in the visible light range, the light ray 102 will pass through the slit. A second ray of high frequency energy 103 approaches the first section 90 of the screen at a slight angle and impinges on the phosphors in the hole 95. The phosphor then emits light of a color dependent on the characteristics of the phosphor struck and the wavelength of the impinging energy. This emitted light passes through the narrow slit and out the other side of the second section 91. When a beam of light such as 103 strikes the phosphor on the hole 95 of section 90, some of it is also reflected in the same manner as that shown.

Therefore, due to the interaction between the phosphor coating 99, the holes 95, and the overlapping edges and very narrow slits formed thereby, the impinging high frequency radiation, which ahs the pattern of the specimen being examined as modulated onto the visible radiation passing through and around the specimen, forms a finely resolved optical image. Any high frequency radiation which was not absorbed by the phosphors and converted into light, such as rays 102, passes through to the remainder of the tube.

Some of the light from the second section 91, which passed through the narrow slits formed by the overlapping holes 95, is radiated upwardly toward the first reflecting electrode 105-1 of a series of metal reflecting electrodes 105-1 through 105-9. Actually, the image produced by the examination of the specimen is present here but it has shadows and other defects which are corrected by other tube elements, as will be described.

Each of the reflecting electrodes 105-1 through 105-9 is a metal mirror, which is highly polished and preferably slightly concave in shape. The reflecting electrodes 105-1 through 105-9 are positioned with respect to one another so that the image appearing on one reflecting electrode is reflected to the next successive electrode. In placing the electrodes in the tube 75, they are first made adjustable with respect to one another so that the best positioning of each electrode may be obtained. In order finally to position the electrodes, a visible light is placed at the input side of the tube and the electrodes are positioned until maximum output brilliance is obtained at the other end. In view of the narrow slits formed by the overlapping holes, the image tube operates in many respects like and optical monochromator, with a long optical path length being formed by the successive reflections of the optical image from reflecting electrodes 105-1 through 105-9.

Leads 107-1 through 107-9 are connected to a respective electrode 105-1 through 105-9 and brought out through a suitable seal (not shown) in the envelope77 of the tube. The leads are connected to tap on a voltage divider (not shown) which are respectively more positive with respect to one another. In a preferred form of the invention, an inter-electrode voltage difference of about 18 volts or more is maintained between successive electrodes. Therefore, electrode 105-9 is charged 144 volts more positive than electrode 105-1. The electrodes 105-1 through 105-9 effectively serve to attract and collect charged particles which are inside the tube 75. They may, in effect, be considered a filter, to filter out these particles.

The image is reflected from successive electrodes 105-1, 105-2, 105-3 and 105-4. After being reflected from electrode 105-4, the image passes through a second screen 110 which is located between reflecting electrodes 105-4 and 105-5 and which is similar in construction to the first screen 87 (Figure 3). However, in screen 110, no radioactive particles are used. Screen 110 is also slightly offset from screen 87, so that the hole pattern does not match. This tends to make more of the remaining high frequency strike a phosphor. A magnetic focusing coil 112 is placed around the envelope 77 so as to focus the radiation at the screen 110 onto it. The focusing coil 112 is supplied current from a suitable source (not shown). The radiation which was not converted to light by the first screen 87 impinges on the second screen 110 and some of it is converted into visible light by the primary color phosphors. Since the radiation pattern passing through the first screen 87 still preserves the configuration of the image of the specimen, the light pattern formed by the second screen 110 reinforces that formed by the first screen 87. The optical image is further resolved at the screen 110 due to the narrow slits which are formed by the overlapping hole configuration.

The optical image which is formed at screen 110 is directed upward to the next reflecting electrode 105-5 and reflected into successive electrodes 105-6, 105-7, 105-8 and 105-9. From the last reflecting electrode 105-9, the image now focuses onto a third screen which is similar to the screen 110, i.e., the same as screen 87 without the radioactive particles. The final optical image is formed at the side of screen 115 adjacent the quartz window 67’. It should be realized that since most of the invisible high frequency radiation will have been converted into light energy by the screens 87 and 110 that the phosphor particles coated onto screen 110 serve a rather limited use. However, if any invisible high frequency radiation is present there, it is converted into light energy by the phosphors. A focusing coil 117 is placed around the envelope 70 of the tube 75 surrounding the screen 115, for the purpose of focusing this invisible radiation. The narrow slits of screens 110, as formed by the overlapping holes 95, serve further to resolve the optical image.

It should be realized that any suitable optical correcting devices may be utilized in order to reflect or bend an optical image through a desired angle. For example, prisms may be used in conjunction with the screen 87, 110, and 115 in order to focus the optical image onto the reflecting electrodes or finally onto the output window 76’.

The final image appearing at the output of the screen 115 is passed through the quartz window 76’ where it may be viewed through a suitable lens system or projected onto the screen. If desired, photographic equipment may be utilized at window 76’ along with any suitable filters to take a picture of the image. Television equipment, color or black and white, may also be used.

Operating a microscope in accordance with the principles of the invention, many different types of specimens have been examined and photographed. One such specimen was magnesium which was examined in the following manner. A piece of magnesium was first field down to get small metal filings which were placed between quartz cover slides and mounted adjacent the condenser 49. The magnesium filings were then bombarded with the plurality of radiant energies from the various sources previously discussed. With energies of wavelengths in the order of 5 Angstroms produced by the tube 11; in the order of 0.9-0.01 Angstroms produced by the radioactive guns 27, 56 and 57; and in the order of 280 megacycles by the oscillator 52, directed onto the specimen, pictures of the internal, crystal-like structure of the magnesium were obtained.

Although a particular structure has been described, it should be understood that the scope of the invention should not be considered to be limited by the particular embodiment of the invention shown by way of illustration, but rather by the appended claims.

What is claimed is: [Not included here]

US Patent # 2,850,661

Lamp

Elmer P. Nemes

This invention relates to electrically energized lamps for the production of high intensity illumination in visible spectrum.

It is an object of the invention to produce a lamp which is small in size and one which produces intense illumination without operating at excessive temperatures, thereby providing a long operative life. Another object of the invention is to provide such a lamp which may be operated from the conventional 110 and 220 volt, 50 and 60 cycle per second supplies without requiring step-up transformers or rectifiers.

It is another object of the invention to provide a lamp in which the illumination is produced by a combination of incandescent filaments and gases or vapors excited by electric discharge. Another object of the invention is to provide such a lamp which utilizes a plurality of incandescent filaments in conjunction with the electric discharge gas excitation.

It is a further object of the invention to provide a lamp which may be manufactured and operated without requiring the creation or maintenance of a high vacuum condition within the lamp. Another object of the invention is to provide such a lamp which may be produced and operated with an internal pressure in the range of zero to two-thirds of an atmosphere absolute.

It is another object of the invention to provide a lamp which is cooled by a target adjacent the filaments thereof, the target being constructed of a metal which absorbs oxygen on heating and gives off oxygen on cooling. A further object of the invention is to provide such a lamp which is cooled by a heat sink comprising a metal jacket surrounding the electrical conductors therein. Another object of the invention is to provide such a lamp with a cooling fluid conductor positioned within the lamp and surrounding the jacket.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. The drawing merely shows and the description merely describes preferred embodiments of the present invention which are given by way of illustration for example.

In the drawing:

Figure 1 is a sectional view of a preferred embodiment of the invention, taken along line 1-1 of Figure 2;

FIG. 1.

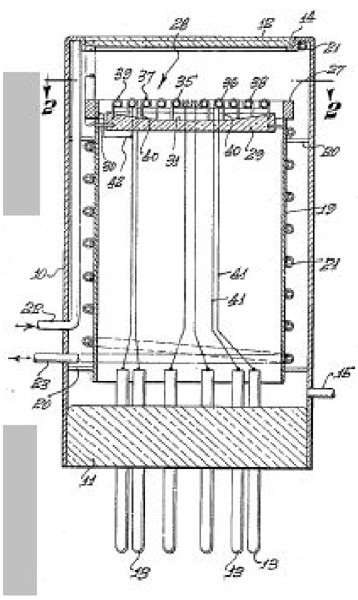


Figure 2 is a sectional view taken along line 2-3 of Figure 1; and

FIG. 2.

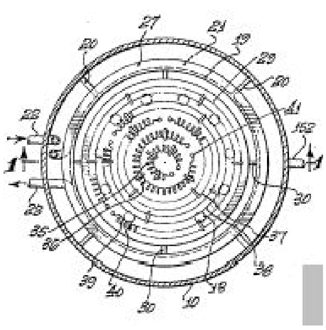
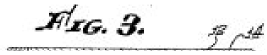
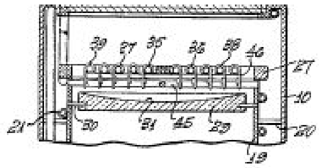


Figure 3 is a partial sectional view of an alternative embodiment of the invention shown in Figure 1.

FIG. 3.





There are two sources of illumination in the lamp of the invention, namely, one or more resistance type filaments which are heated to incandescence by electric currents therein and a gas or vapor which is excited by an electric discharge therethrough. The elements of the lamp are contained within a housing or case 10 which may be a cylindrical shell having a base 11 at one end and a transparent plate 12 at the other end. The base 11 may be of glass or other suitable insulating material and has a plurality of electrical feed-through conductors 13 mounted therein and extending from both sides for making electrical connections between the elements within the lamp and the surrounding equipment. The transparent plate 12 may be made of quartz, pyrex, or other high temperature resistant transparent material and is mounted in a recessed section 14 of the case 10. The base 11 and the plate 12 are sealed in place in the case 10 so that the interior thereof may be evacuated. A length of tubing 15 is positioned in the wall of the case 10 providing for evacuation or injection of gas into the interior of the lamp.

A jacket 19 is positioned within the case 10, being supported by eight brackets 20 which extend inward from the inner wall of the case 10. The jacket is open at each end thereof and extends nearly the entire length of the case from adjacent the base 11 to adjacent the plate 12, preferably being of the same configuration but smaller than the case and creating a minimum of waste space. It is understood that the case could take any form, the cylindrical shape producing a more uniform distribution of light and heat. The primary function of the jacket 19 is to serve as a heat sink to conduct heat away from the heat producing elements of the lamp. Therefore, the jacket should be made of a good heat conducting material, preferably a metal, such as stainless steel, copper or nickel. A length of tubing is formed into a plurality of turns 21 which are positioned around the jacket 19 and the recessed section 14 of the case 10, preferably being in intimate contact therewith. Ends 22 and 23 of the length of tubing are positioned in the wall of the case 10 and pass therethrough, permitting continuous flow of fluid through the turns of tubing 21 for conducting heat from the interior of the lamp.

The jacket 19 also provides support for a target 27 and a filament structure 28, both positioned near the transparent end of the lamp. A block 29, forming a part of the filament structure 28 of Figure 1, is positioned within the jacket 19 adjacent one end thereof by four brackets 30 extending inward of the inner wall of the jacket. The block 29 is preferably a mirror having a concave upper surface 31 which directs illumination outward through the transparent plate 12 and reduces the radiation of light towards the base 11.

A plurality of filaments 35, 36, 37, 38, 39 are supported on hangers 40 which are mounted in and extend upward from the block 29, the filaments preferably being disposed in concentric circles and in a single plane, thereby providing a uniform illumination intensity. Each of the filaments 35 through 39 may be similar to the filaments used in conventional incandescent lamps and is preferably made from a high temperature resistant material such as tungsten or the like. The outermost filament 29, being the longest, is preferably proportioned so that it may be connected directly across the supply source, such as a 110 or 220 volt line. The remaining filaments are made from the same type and size of wire and have the same turn diameter and spacing so that, with equal currents therein, equal intensities of illumination will be produced. Equal currents may be provided for each filament by connecting each to a supply having a different voltage or by connecting a resistor in series with each to make the resistance of all of the series combinations equal so that all the series combinations may be connected to the same supply.

Each end of each of the filaments is connected to one of the feed-through conductors 41 which pass through the block 29 and are positioned within the jacket 19. The target 27 is connected to one of the conductors 41 by a conductor 42. If desired when dropping resistors are connected in series with each of the filaments, the resistors could be positioned within the case of the lamp, thereby requiring only two feed-through conductors 13. However, it is advantageous in the operation of the lamp of the invention to provide two conductors 41 and two feed-through conductors 13 for each filament so that greater heat transfer from the filament area is achieved, thereby contributing to a lower operating temperature and a longer operating life.

After the lamp of the invention has been assembled as described above, the interior thereof is partially evacuated through the tubing 15 and then flashed with an electric discharge lamp gas. The term "flashed" herein means the injection of a very small amount of gas into the interior of the case, the amount of the gas involved being in the order of a few molecules, not being an amount great enough to make a significant change in the pressure within the case. An important feature of the invention is the fact that it is not necessary to evacuate the interior of the lamp to anything approaching absolute zero pressure, nor is it necessary to provide an inert gas within the lamp. Satisfactory operation is obtained when the pressure within the lamp is not more than two-thirds of an atmosphere absolute, the preferable operating point being in the order to one-half atmosphere absolute. The electric discharge lamp gas which is flashed into the lamp may be hydrogen, sodium, mercury or any of the noble gases, such as helium or argon, argon and hydrogen being preferred since they produce the maximum amount of illumination.

When the lamp is connected to a suitable source, an electric discharge is created between the target 27 and the various filaments. This discharge excites the electric discharge lamp gas within the case and provides illumination in addition to that of the incandescent filaments.

The target 27 is made of a suitable high temperature resistant electrical conducting material such as tungsten, platinum, rhodium or gold. The target is constructed to encircle the filaments and is positioned adjacent the outermost filament 39 in order to create the desired electric discharge. It is preferred that the target be made of platinum or other material having the property of absorbing oxygen as its temperature increases and giving off oxygen as its temperature decreases. The absorption of oxygen by the platinum when the platinum is heating up produces a cooling action in the surrounding atmosphere and materially reduces the operating temperature of the filaments of the lamp. It ahs been found that the mass of platinum provided in the target 27 must be at least one and one-half times the mass of the filaments in order to perform an adequate cooling operation. It has also been found that an increase of the mass ratio to no more than two to one does not produce an improvement in the cooling operation. Therefore, it is preferred that the target 27 be made of platinum and have a mass in the range of one and one-half to two times that of the mass of the filaments.

A lamp constructed in the form of Figures 1 and 2 with five concentric filaments, the outer filament being about two and one-half inches in diameter, and the target being spaced about one centimeter from the outer filament, with the overall diameter of the case being about four inches, draws approximately 40 amperes from a 220 volt 60 cycle per second source. In this unit, dropping resistors were provided outside the case in series with each of the filaments except the outermost to provide equal current densities in the filaments.

An alternative construction for supporting the filaments is shown in Figure 3, wherein an insulating support member 45, which may be in the shape of a cross, is supported by the jacket 19 across the end thereof. A plurality of hangers 46, similar to the hangers 40, are used to support the filaments, each having one end thereof wrapped around the support member 45 with the other end thereof projecting upward therefrom and engaging a portion of the filaments.

A lamp constructed in accordance with the teachings of this invention will operate at considerably lower temperature than conventional incandescent lamps and yet will provide intense illumination in the visible, infrared and ultraviolet spectrum. Because of the lower operating temperature, the filaments do not become hardened and brittle, resulting in a material increase in the operating life of the lamp.

Although exemplary embodiments of the invention have been disclosed and discussed, it will be understood that other applications of the invention are possible and that the embodiments disclosed may be subjected to various changes, modifications and substitutions without necessarily departing from the spirit of the invention.

I claim as my invention: [Claims not included here]