Annual Meeting
OF THE
ymens' and Live Stock Association of British Columbia.
Will Be Held at
Victoria Parliament Buildings
WEDNESDAY AND THURSDAY, 26th and 27th February, commencing at 2 p. m. Wednesday.
OR J. M. MUTTER, Somenos.
G. H. HADWEN, Sec.-Treas.

TIFICATE OF REGISTRATION OF EXTRA PROVINCIAL COMPANY.
"COMPANIES' ACT, 1897."
ereby certify that "The Yreka Copper pany" has this day been registered as Extra Provincial Company under the panies' Act, 1897," to carry out or all or any of the objects of the Com- to which the legislative authority of Legislature of British Columbia ex-
e head office of the company is situate acoma, Pierce County, State of Wash- U. S. A.
e amount of the capital of the Com- is $1,000,000, divided into 1,000,000 s of $1.00 each.
e head office of the Company in this ince is situate at Duncans, Vancouver d, and N. S. Clark, Mine Superintend- whose address is Duncans aforesaid, e attorney for the Company (not em- red to issue or transfer stock.) The any is limited.
e time of the existence of the Com- is fifty years.
en under my hand and seal of office ictoria, Province of British Columbia, 20th day of February, one thousand hundred and two.
S. Y. WOOTTON.
Registrar of Joint Stock Companies.
e following are the objects for which Company has been established:
r the purpose of engaging in the busi- of the mining and reduction of ores e United States and British Columbia; business to include the acquisition of g claims, locations and properties, r by original location or by purchase ease, the working and operation of claims and properties, the building operation of roads, railroads, and any means of transportation reasonably ssary to the accomplishment of said ess, the construction and operation of ction works, the borrowing of money, sale or mortgage of real or personal erty, and the doing of any and all s necessary or fairly conducive to the cution of said principal business.

TORIA ASSESSMENT DISTRICT.
ing Victoria City, North Victoria, h Victoria, Esquimalt, Coast District and Islands.)
e is hereby given, in accordance with tutes, that Provincial revenue tax l assessed taxes and income tax, d and levied under the Assessment l amendments, are now due and pay- r the year 1902.
axes collectible for the Victoria As- nt District are due and payable at ce, situate at Victoria. This notice, s of law, is equivalent to a personal l by me upon all persons liable for
l at Victoria, 23rd January, 1902.
C. BOOTH, Assessor and Collector
Victoria Assessment District, Victoria Post Office.

NCIAL SECRETARY'S OFFICE.
Honour the Lieutenant-Governor in has been pleased to make the fol- appointment:
28th January, 1902.
Flewin, of Port Simpson, Esquire, nent Agent, to be a Stipendiary ate in and for the County of Van-

Fascinating Story of Birth, Life and Death of Temporary Stars

A Simple Explanation of the Consequences Following the Collision of Two Dead Suns. From "The Romance of the Heavens," By A. W. Bickerton, of New Zealand University.

In November, 1572, Tycho Brahe, the Danish astronomer, was unspeakably astonished to behold a new star of extraordinary brilliancy in the constellation Cassiopeia. It must have appeared quite suddenly, for, Tycho Brahe tells us, he believed it was not visible an hour before he noticed it; and indeed coach drivers and country people observed it at the same time.

When first seen it was very brilliant. It soon became more brilliant than Sirus; it rivaled Jupiter; it was even brighter than Venus at quadrature, and it grew to be so bright it could be seen at noonday.

The fact that it was fixed in space showed that it was at true stellar distance, and therefore it was the most brilliant body in the entire heavens. Probably it gave off over a hundred thousand times as much light as our sun.

Then in a short time it began to diminish in intensity; in a few months it was only a star of the second magnitude; and in seventeen months the Pilgrim, as it was called, had faded away completely.

These evanescent stars are recorded all through history both in China and Europe. The Chinese record gives us a long list of strange stars, many of which were doubtless true temporary stars.

On many occasions they have been observed in Europe. Possibly the most remarkable temporary star recorded was in B. C. 125, which was visible in the daytime and is said to have attracted the attention of Hipparchus, and led him to draw up a catalogue of the stars, which is the earliest on record. In 1572 occurred the brilliant phenomenon described by Tycho Brahe.

The first star to which powerful modern astronomical instruments were applied was the new star in the Crown which appeared in 1866.

The spectrum of this star, when examined, appeared to be continuous, with bright lines upon it, showing the presence of luminous gases and incandescent solids, but much information as to its nature was not obtanied.

It was the appearance of the new star in the Swan of the year 1877 that first directed my attention to the stupendous nature of these new stars, and to the fact that astronomers were entirely at a loss for a sufficient explanation to account for their extraordinary brilliancy and rapid disappearance; the current theories of the time being both inconsistent with the modern conception of energy, and utterly insufficient to account for their peculiarities.

All observations of temporary stars tell the same story of sudden appearance; temporary increase of brilliancy; rapid and generally complete disappearance, sometimes leaving a planetary nebula.

A new star is a giant sun that has been suddenly born; a body of surpassing brilliance and inconceivable size; appearing all at once in the universe, to fade away again in a few months.

It is quickly apparent, as already shown, that in the majority of cases such collisions would not involve the impact of the bodies as a whole, but would be generally of a grazing character, producing two wounded stars, and a third intensely heated unstable body.

What other explanation than that just indicated can there be of such a stupendous event? Suggestions there are, startling in their insignificance; the sudden combustion of hydrogen in a dead sun; the bursting out of a volcano; or the plunging of a planet into a dead sun; the passage of a meteoric train through the atmosphere of a dead sun; the collision of meteoric swarms; the tidal disturbance of two dead suns passing near one another, and so on.

Suppose we even imagine such a mass of heated matter to be produced, how long would it take to cool? Our particle of cosmic dust—the Earth—probably took hundreds of thousands of years. Our sun has taken tens of millions, and probably will take more than ten million years longer to cool. Yet a body ten thousand times his brillicnce vanishes in a year!

The star Nova Aurigae appeared in December, 1891. The history of this star is most interesting and extraordinary. Between December 8th and 10th a star made its appearance where no trace of a star had before existed.

It was not there on the 8th, but was in evidence on the 10th, and there were two intervening days when clouds prevented observation; yet for many weeks after its actual appearance no eye perceived it.

It was, however, writing its record on the plates of the photographer. It was first seen in February, 1892, by Mr. Anderson.

He wrote an anonymous letter, asking if the star were not a new one. Such indeed it proved to be, and soon telescopes all over the world were scanning the face of the stranger. The star was found to be double, and its two parts were moving at a relative velocity of more than 700 miles a second. Then a third body was detected to be moving at the rate of some 23 miles a second.

The character of this third body was long in doubt. At length it expanded into an undoubted and undeniable planetary nebula, and Professor Barnard, of Lick observatory, by means of his magnificent telescope succeeded in measuring its disc.

So greatly was scientific attention drawn to this star that Mr. Alfred Taylor, F. R. A. S., hiself examined the work of 85 observers, and stated that the material from which he abstracted his report would be equal in volume to that of an immense book. His summing up of this enormous mass of recorded observations was to the effect that that there was no doubt that the new star consisted of three separate bodies.

The suggestion made in this cosmic theory is that all temporary stars result from the grazing impact of stellar bodies, and in those cases where the temporary star has appeared where no star before existed, the colliding bodies of non-luminous or dead suns.

The variable star, Algol, demonstrates that there is such a thing as a dead sun, and over 30 years ago Dr. Johnstone Stoney suggested that they existed, while Sir Thomas Ball believes that they are probably more numerous than the stars that give out light, or what we call fixed stars.

It may be thought that there would not be energy enough to cut parts from the solid masses of the sun, but a few minutes' consideration will show that the energy available is absolutely millions of times greater than that necessary.

It might also be thought that if the bodies grazed at all, a complete coalescence would ensue, due to their mutual attraction. A few more minutes' consideration will show, in the first place, that not merely is a cosmic body easily cut, but that no coalescence will take place unless a comparatively large mass is struck from both.

I will show later on, that when a third of the bodies are struck off, and the sheared off masses coalesce, that the great additional attraction exercised by it upon the retreating bodies will in most cases cause a "whirling coalescence" of the bodies; but the assumption that we are making now is that a small fraction, say a tenth or a fiftieth part, is struck off from each of the two bodies, the two small fragments coalescing to form a third body.

In the case of an express train we speak of a velocity of sixty miles an hour, or a mile a minute. Compared with this velocity, that acquired by comparatively small suns of 100 miles a second gives us 60 squared, or 3,600, multiplied by 100 squared, or 36,000,000, so that an express train moving at the velocity of 100 miles a second would develop an energy of 36 million times that involved in a speed of a mile a minute.

We have also to take into consideration the relative masses of the train and the star in order to be able to estimate the shearing force available. Not only would these considerations show that the force available is enormously greater than is necessary to produce the shear but it also indicates the amount of energy available in order to account for the temporary escape of the bodies from each other's gravitating attraction.

It is clearly demonstrable, therefore, that, were two dead suns to strike off a small fraction from each other, the two colliding bodies, in a wounded condition, would pass on their way, because neither body would exercise a sufficient attraction to produce coalescence unless the graze was considerable.

Were I to enter mathematically into the problem, I could show that were two equal gaseous suns to fall upon one another, without having originally any proper motion, that the heat produced by the collision would be exactly sufficient to form a new body of the same temperature and of a diameter the sum of their diameters, the whole of the energy of their heat being transmuted into the energy of expansion; and I could also show that the condition would be one in which the molecules would be in equilibrium.

In other words, the energy of the impact of two similar gaseous suns would just suffice to make a new mass of four times of volume of both, and this new sun would be in equilibrium when it was neither hotter nor colder than the two original suns.

Let us suppose our two suns that grazed each other to be dark, hot-centered bodies. Let us suppose a tenth to be cut from each; the shear will not stop them, their acquired speed is so stupendous. The wounded suns go on; but the parts in each other's way must stop each other.

A spinning motion will be present, but almost all that violent onward rush will be converted into motion of the particles, that is, into heat. The temperature may be a hundred million degrees centigrade.

The intensely hot coalesced mass struck from the two suns is of course converted into gas. It is too hot to be stable, and the great mass expands at an incredible speed—generally the giant blazing globe would increase more than a score of million of miles a day.

There is no fancy in any of these statements, they are all plain matters of fact, deductions from the known laws of matter and energy; they assert exactly what would happen were a pair of suns to come into partial impact.

Therefore, if two dark suns did graze and cut off a tenth of each, it is absolutely certain that a new star would appear in the universe. Calculation demonstrates that such graze occupies less than an hour.

Singularly enough, with bodies of equal density, the size does not influence the time, because they get up commensurate speed. In this short time, then, a new sun is born.

Temporary stars disappear, not by cooling, but because they are too hot to hold together. All have read of Jules Verne's Columboid, the wondrous chambered shot that quitted the earth, and, such is human daring, I have known some ardent souls that long to make a similar journey.

But not so can we visit the moon; we have neither the explosive nor the material to bear the strain. About a thousand times the energy of an ordinary shot would be needed to get up speed sufficient.

As already stated, a shot hurled with a velocity of seven miles a second would leave the earth and not return.

Imagine that all them olecules are shots above the critical velocity; when any come to the surface, they travel straight on and leave the mass.

Hence the mass expands in two ways; it expands by the tremendous pressure exercised by the molecules striking one another, and also expands because the molecules are always escaping and flying away.

Their speed may be taken as a million miles an hour. After some months nothing remains but an immense hollow shell of gas always expanding, in fact, one of Herschel's planetary nebulae; only such a nebula as here described is not permanent—it continues to expand, and finally strews space with countless wandering molecules, some of which will in latter ages form material for the origination of new universes.

So that in whatever other ways temporary stars may yet be explained, it is certain that the comparatively small partial impact of dead suns must produce a temporary star that will suddenly blaze forth, increase in brilliancy for a few days, then pass away by dissipation into space.

—"The romance of the Heavens," by A. W. Bickerton, Professor of Chemistry, New Zealand University.

The Fashions and Styles, What Women Will Wear

Tailor Gowns for Early Spring---Promise of Classic Simplicity in Evening Dress---Is it Be Plain or Decorated Street Skirts?

FOR the coming season, all signs as yet point to a classic and beautiful and perfect simplicity in evening gowns. The Directoire and princesse styles will be largely elected for, but so attractively modified that there will be no evidence at all of former exaggeration. Satins of the richest but most supple quality, rich brocades, crepes de Chine, peau de soie will be greatly used—any textile, in fact, will be selected among the season's display that will lend itself to the clinging, artistic style of dress still demanded. Lace applique trimmings are, if possible, more beautiful than ever, for even finer workmanship is demanded where the material is cut away and the lace embroidered directly on the gown. The spangled-net dresses are now considered passe and are being remodeled for "second-best" wear, by applying lace bands and medallions to them. A gown of this kind, just freshened, has a band of lace squares arranged so that only the points meet. This is placed at the edge of the trained skirt. A similar trimming borders the edge of the half-low bodice, and a like design heads the graduated circular flounce of the skirt.

For everyday uses—for traveling, shopping, the promenade, etc.—the high-class tailors and modistes will this spring send out a modish and attractive style of tailor-gown which will include a natty open-front jacket and a very gracefully-hung moderately short skirt that will be a welcom compromise between the dip style that swept the streets and the necessarily abbreviated forms used for golf, rainy days and cycling. While having a certain smart appearance and cachet of its own, it will prove a most sensible and comfortable gown, with no tugging with one hand to keep the skirt from the pavement. It will not show the instep of the boot, but it will clear the ground all around, and be cut but very litttle longer at the back than on the front and sides, and have a very pretty flare at the hem, particularly at the back. For morning wear these gowns will be very plain. For other uses both skirts and jackets will be stylishly trimmed, the latter opening over the daintiest of fancy silk shirtwaists.

The tailor-gowns for early spring will be more and more like the French, rather than the English, version of a typical tailor suit. The native French women have never taken to the tailor-gown proper, a reason for which might perhaps be found in an answer a Frenchman made when asked if he did not think a certain lady of rank very beautiful. "N-no, I cannot say I do; she does not seem feminine to me in her harsh gown." This is the French idea of beauty par excellence, and though you behold the French woman clothed in perfectly draped, finished, and fitted attire, one never sees a true elegante in severe tailor things with stiff shirt fronts, uncompromising collars, and starched-looking ties. Let the skirt be what it may in its very simple but fascinating perfection, there is always sure to be something under the chin made of tucks and lace and insertion, or at least there is a soft silk bow or sailor tie of India mull a fancy belt or jeweled chatelaine.

In materials for Lenten gowns there is very little shown that is positively novel, thus far at least. Yet there is an exceedingly long list between the broadcloths and satin-faced and kid-hairs, homespuns, and cashmeres, especially in black, fawn color, and the light grey tints. Fashionable dressmakers, however, are already making up some notably smart gowns for wear during Lent, that are formed variously of light-weight Venetian cloth, smooth-finished serge, camel's hair and vicuna. The new muslins, lawns, and other spring and early summer materials which are now making their mid-winter appearance display most artistic designs and effects, the most attractive styles running mainly to delicate tints and small figures.

Pale, lovely shades of cloth have been very much used for handsome housegowns this season. But these soil easily, especially in these days of long trains sweeping waxed floors. The gowns can be quite satisfactorily cleaned, but cashmere, which does not soil so quickly, and is decidedly less expensive, makes a good substitute for a simple house gown. These cloths and cashmeres form a most effective back-ground for ornamentations with heavy laces and passementeries, that are to be bought very decided bargains before the spring stock of handsome new trimmings are set forth. Elaborate yokes and sleeve and skirt bands are the rule, and in some cases there is a decoration in yoke effect on the top of the skirt which meets and corresponds with a trimming around the lower part of the bodice. This gives a princesse effect which is most becoming.

The tendency in all the charming medley of styles soon to be set forth for inspection and choice is yet to be discovered, and whether we are really to wear plain or decorated street skirts, and they are to be long or short, is a matter to be settled between the clever dress-designers and the leaders of fashion, who, after all, have the privilege of deciding the important question. It is the love of change, in conjunction with the great interests of trade, that, of course, stimulates the production of new modes and materials. The prettiest gowns are very usually the simple ones, with some noted individuality of style, which are the result of artistic suggestion offered by French models rather than actual copies, and from this fine combination of French and American tastes we gain the most attractive and beautiful sartorial results known in the history of dress.

More than ever are waists fastened up the back worn by the owners of graceful and slender figures, and a pretty and girlish gown of soft sage green peau de soie has all the upper part of the waist and sleeves shirred in close-set form like perpendicular tucks. Over the shoulders falls a collar of heavy string gray Russian lace, through the beading of which, at the neck and about the shoulders, runs a threading of black baby-velvet ribbon, with choux of the same as a finish. New white satin waists, hooked at the back, are made with straps of the satin embroidered in tiny rose and vine patterns, with a stock and girdle the shade of the embroidered silk blossom.

Although the princesse dress is in marked favor for this winter, especially for elegant evening wear, the bodices and skirts are for the most part made separately, the genuine princesse being in the minority; but the effect produced when the gown is donned is that of unbroken breadths from the top of the bodice to the end of the train; therefore, waist-lines are obliterated in every possible manner. The decorations on this sort of gown begin on the shoulder of the bodice, and at the belt meet similar trimming on the skirt, giving the appearance of a continuous garniture the entire length of the garment.

Round velvet hats worn by young women with handsome calling-gowns are decorated with short, full ostrich plumes, out of which rises a soft feather chou, with antennae of some vivid or delicate color. Often two handsome plumes are placed directly in front, after the style of the Alsation bow, the invisible crossing stems held by a stylish gem-set buckle. The brim narrows considerably at the back, and is faced underside with satin the color of the antennae. Given a pair of velvet ribbon strings with the brim of this hat curved down slightly at the sides, and you have a Directoire or Empire bonnet, fit for a dowager of any stage.

The postilion will be attached to the back of some of the new black Eton jackets for wear during the Lenton season. Some of the models of these smart wraps are lines with pinkish violet brocade and trimmed with fine black silk appliques. Again, the jacket has a belt or a semblance of a belt from which the postilion falls, and it takes the form of a kilted tab or two flat narrow ones, supplemented by overlapping tabs that are shorter. To give a slight change to the dress are a detached belt and postilion, which can be worn or not as one desires. It is simply one form of girdle or belt to wear with a shirt-waist, and, with stock to match, it is very pretty, made of plain or panne velvet.

For bridesmaids' dresses for the early spring are already set forth some very charming textiles in both white, tea-rose, and orchid tints. These lovely weaves include silk-embroidered India tissues, princesse organdies, in petite floral or French arabesque designs in applique effects. French silk gauzes printed in very delicate and beautiful Mary Antoinette devices, and India silk mulls and chiffons, silk or pearl dotted, satin-striped, or finished with flower and foliage borders about three inches wide.

Black, which has been so popular so long, will not pass from favor in the making of spring tailor suits and the demi-dress gowns of peau de soie, French cashmere, failles, and Muscovite silk. Two or three handsome shades of brown and gray are to be in vogue, but marked favor will be shown to green. It leads in the list of some of the handsomest light delicate wools, taffetas, and other silks, and a soft pretty tint of sage green will be prominent among Easter gowns.

A feature observable in the survey of some of the spring's advance models that are now held in abeyance, is, that tucking will still be used as a decoration during both the summer and spring seasons. Stitched bands will not be discarded, and on light wool costumes, strappings and many small jeweled butttons and buckles will be used.

Gowns of white or opal gray broadcloth, with fur, lace, and silk applique garnitures, are just now very much en evidence at all the smart functions in New York, Washington, and other large cities.

BLUECOAT BOYS STILL.

Though Hospital's Gone, Boys Retain Blue and Yellow Uniform.

UTILITARIANS will learn with regret, perhaps, but lovers of the picturesque with relief, that there is to be no immediate change in the well known costume of the Christ's Hospital boys. The days of the school itself, as it now stands in the city of London, are numbered. The new buildings at Horsham, with little at all of grace and nothing of tradition about them, are ready. But the difficulty of replacing the long blue coat and yellow stockings, the girdle and bands has once again been too much for the reformer.

To most people it is a surprise to hear that a feature of the bluecoat dress until the middle of the last century was a cap. Once upon a time it is said to have been red, but, if so, the color was soon changed to blue, of which alone any historical record remains. Red or blue, the caps were merely ornamental, and were far too small to be of any practical use as headgear. Another item of the dress which has disappeared is the kersey or long cassock locally known from its color as a 'yellow"—which was formerly worn underneath the long coat and figures in most of the statues and pictures representing "Blues." The breeches remain now pretty much what they were at first—garments of no particular cut or fit, made of an indescribably out-of-the-way and unpleasant material, half cloth and half corduroy, unlikely to be met with elsewhere. The coats are externally as all the world knows them, but the inner glory of an amazing yellow lining is seldom suspected. They are curiously kilted at the waist, so that the skirts shall hang properly, and they have two rudimentary epaulets on the shoulders, which have given rise to a good deal of speculation. Once there was a fashion of fastening the coats with hooks and eyes, but for a century and a half at least there has been a regulation button with the head of King Edward VI. for a design upon it.

The coat is incomplete without the leather "girdle," of which there are two varieties—one a plain narrow strap, the other, that known as the "broad," which is stamped with a cunning arrangement of stars and the inevitable bust of the royal founder. This is fastened with a silver buckle, known as the "tray," being the badge of Mr. Travers' foundation and in itself a rather handsome addition to the dress. The stockings are flamboyant and ob- philospophy:rauaB-B pfyr wl syrahtmih them up. Garters are held of small account, and those who boast themselves to be "swells" are prone to show it by an exaggerated roll at the top of the stockings, which serves to hold it in place. Only the bands and the shoes are left. The latter have neither—they are ugly and generally ill made, and the less said about them the better.

The boys have little desire to escape from the dress, less because they are conscious of the dignity of their cloth, on which Lamb insisted, than because, after the first revolt of custom, they are sensible of its convenience. The absence of a cap is an unmixed blessing while it lasts, and even longer. Bald heads are rare in after life among "Blues." The only serious objection to the long coat is that it is rather heavy for young boys, whose growth it cannot possibly assist, while the skirts are a nuisance in wet weather, and, if not looked after on a wet holiday, even a danger. Everyone who has passed along Newgate street is familiar with the devices in use for "tucking up" the latter.

The bluecoat boy in his present dress has character. "His very garb," wrote Lamb, than whom there was no finer judge, "as it is antique and venerable, feeds his self-respect."

This is an unexpected pleasure, said the signal service officer, looking out of his window with a frosty smile at a snowstorm he had not predicted.—Chicago Tribune.

Experiments With Becquerel Rays, To Produce Light Without Heat

A Way Found to Make Luminious the "Mysterious" Radiant Eenergy of Certian Substances---The Possibilities of the Discovery---Some Things That Store Light.

PROF. WILLIAM HALLOCK, of Columbia University, has discovered a new kind of light which is without heat. His discovery is the result of an experiment made with certain chemical substances which have long been known to radiate a mysterious energy, the source of which scientific men have not succeeded in tracing.

The form of energy, known under the name of Becquerel rays after the French scientists who discovered it, has always manifested its presence in much the same manner as ordinary light, except in the one important feature of not being visible. For instance, photographs could be made with the rays, if sensitive plates were left exposed to their influence in dark rooms, but no one has been able to see the rays.

Prof. Hallock hit upon a plan for rendering them visible, and as they emanate from thousands of substances, the discovery is important. Again, while the experiment was strictly a laboratory test and was therefore conducted on a small scale, the procedure has been established, and, as Prof. Hallock says, it only remains for the industrial investigators to place the discovery on a commercial basis.

What follows was obtained from Prof. Hallock in his laboratory while the experiment was being made.

"In the first place," said Prof. Hallock, "it must be conceded that the word darkness is only a relative term. There are very few places in the world that are absolutely dark in the truest sense of the word.

"The number of substances which are capable of storing sunlight all day and then emitting it at night is very great. It may be that all substances are capable of doing it to a greater or less extent.

"During the last five years the investigation of the energy of such substances has been very extended. Prof. McKissick, of Auburn, Ala., made experiments with many common substances such as sugar, glucose and chalk, and was able to make photographs with the energy that emanated from them after they had been exposed to the sun all day. Prof. McKissick and his assistants also found that many strictly chemical substances possessed this power of storing energy.

French scientists gave the subject special attention and Becquerel achieved fame in this line. He discovered that uranium salts do not need sunlight from which to draw energy, but are all the time giving off radiations, which are X-ray in quality in that they will pass through opaque bodies and affect photographic plates on the other side.

"McKissick placed some coins and keys on a plate-holder containing a photographic plate. On these he placed a piece of wood 2½ inches thick.

"On the wood he placed some common brown sugar which had been allowed to absorb sunlight and he covered all with a black cloth and left them in a dark room for some hours.

"When examined it was found that the energy from the sugar had passed through the wood and the cover of the plate-holder and had photographed the metal objects on the sensitive place.

"Becquerel discovered that uranium salts were capable of performing quite as wonderful feats, but that their energy seemed to be an initial energy. At least it was not due to stored sunlight.

"Then came Madame Curie, a woman scientist working in Paris who discovered the radio-activity of thorium and afterwards of pitchblende. Working with her husband she succeeded in extracting from pichblende a substance named polonium which proved to be at least 100,000 times more radio-active than uranium.

"Out of pitchblende still other substances were obtained, such as radium and actinium. So far no one has been able to discover the cause of these rays.

"Although invisible they have manifested their presence very positively in other ways. They will affect photographic plates in the dark. Radium rays will turn ordinary white glass to a brown or a violet tint and like the X-rays have caused inflammation of the human skulls.

"Lord Kelvin has shown that some of these rays are not capable only of conducting an electric current, but that they are capable of generating a current. He connected a plate of copper and a plate of zinc by means of a wire and then exposed the two plates to uranium rays. The moment this was done an electric current began to flow along the wire.

"Prof. Pegram, quoting Becquerel, says the velocity of the rays is about half that of ordinary light, but that the waste is so small that the loss from a square centimetre of surface would be something like a milligrem in a thousand million years.

"Heat or cold, high or low pressure, does not offect them. So that taking them all in all, they constitute the most wonderful physical phenomena within our observation at the present time.

"Now you know that X-rays were long invisible until tungstate of calcium was used in the fluoroscope to make them visible. It occurred to me that some similar substance might be combined with these products of pitchblende to make them visibe.

"After some consideration I fixed upon platino-barium-cyanide. I tried it with the salts. The experiment was a success. I was able to see the light. But come with me to the dark room and see for yourself."

He picked up a shallow paper box, the size of a watch crystal, containing a small quantity of white powder. Near it lay what looked like a piece of greenish-yellow pasteboard.

He carried these into the dark room and laid them on the table.

The room was painted black and every chink and crevice had been stopped up to prevent the slightest ray of light from entering once the door was shut.

"This powder is the radio-active substance," said Prof. Hallock. "As this yellow card is the barium-cyanide, I shall merely lay it on top of the box of salts.

"The salts would be invisible, ordinarily, but when their rays, flowing upward, strike the barium-cyanide, the latter will take on glow. First, however, we must get used to the darkness."

He closed the door and absolute darkness resulted. The writer closed his eyes to hasten their accommodation to the new condition, but it seemed to make no difference whether they were open or closed, he opened them again and strove mightily to see the expected new light.

"It is remarkable how quickly the eye will accommodate itself to conditions of relative darkness," said Prof. Hallock. "When I was in the Governmental astrophysical laboratory at Washington, I was able after awhile to work and even to make copious notes in a room so dark that a stranger entering from the outside would stumble over the furniture helplessly and flounder around generally until we led him to a chair.

"The darkness, however, is very necessary, for I am now using the least rather than the most energetic of the active salts. And you must not be disappointed if you are not able to read a newspaper with it.

"I am now striving to establish a scientific principle; the industrial development of it is quite another matter. But I begin to see the glow now; do you see it?"

The writer did see it. It gradually grew from an indistinct speck in the blackness in front until it became a luminous patch the size of a dollar, and it brightened with the minutes.

To make sure of his eyes he passed his hand before them, blotting out the light entirely, but when he removed his hand there it shown brighter than ever. Again when he was admiring it it suddenly disappeared, apparently of its own accord.

"Why, it has gone," he cried.

Prof. Hallock laughed.

"Yes," he said, "I have removed the yellow screen. You see how quickly the light goes out. Of course, the rays are there just the same, but invisible to us when not combined with the barium-cyanide.

"I will replace the screen. There, you see how quicky they have turned into visible light. There is in that box only two-tenths of a gram of active material. If we had enough so that it could be spread out over, say a square foot of space, and we could get a rare effulgence."

"Well, why not do that for the sake of experiment?"

"For the sake of experiment," he replied, "we have done enough, for we have established our principle; and, besides, the present market price of that material is $5 a gram. That does not, however, preclude the possibility of a practical lighting system being developed from these rays.

"And I am of the opinion that something practical may be made out of this general subject of phosphorescence or self-luminosity of objects. Not only have we discovered that most natural objects have the capacity for storing sunlight, but here is the apparent capacity for creating light itself possessed by many substances which heretofore were supposed to be inert.

"There is room at least for reflection when, as Becquerel points out, a 'quiet, peaceful bit of white salt' is capable of shooting off rays with a velocity of over 92,500 miles a second. There is most urgent need for discovering the source of this energy in view of its utilization by mankind.

"Even in its present condition, enough is know on the subject of phosphorescence to admit of a little experimentation. I believe that the owners of office buildings might help out the twilight materially by the judicious use of certain luminous paints.

"For instance, the walls and ceilings of offices could be covered with these paints and made to emit light enough to last with the twilight on winter evenings until the close of office hours. And if the hallways of houses and public buildings were to be coated in like manner, one could get about them at night without the aid of more artificial light.

"It is possible that the discovery of the source of the energy of Becquerel rays might lead us to the cause of animal and vegetable phosphorescence. This has been a subject of investigation during all ages and especially during the last century, but it cannot be said to have been solved.

"Yet some of the manifestations are truly wonderful. There are over 300 kinds of luminous beetles in the world and they form a small portion of the lower animals that carry their own light.

"You have yourself perhaps heard wonderful stories of the light-emitting capacity of some tropical insects and of certain deep-sea animals. Lord George Campbell told of a huge pyrosoma trawled up from 2,200 fathoms during the voyage of the Challenger.

"It emitted a great quantity of light when irritated. It was a large sac-shaped animal and as it lay in the tub at night the men wrote their names in full length on its back, the names standing out brilliantly in letters of fire.

"There are other tales quite as wonderful, but the theories accounting for these lights are really too numerous to be told at a sitting.

"But in the efforts of Becquerel and of Mme. Curie we have something tangible," concluded Prof. Hallock, leading the way into the laboratory. "We have something to go upon. To be sure we do not know exactly what it is we have. It may be the energy of the sun stored without our present knowledge, although that is hardly likely; it may be some property of the ether; it may be, as Mme. Curie suggested, the result of transcendental radiation more penetrating than X-ray and prevading all space, although Prof. Geitel found that if such is the case the radiations easily penetrate hundreds of yards of rocks, for a radium was still active at the bottom of the deepest mine in which he was able to descend.

"At least it is the newest force with which we have to deal. You have seen how it can be turned into light and when you think that in spite of its speed of 92,500 miles a second the waste from a half-inch of surface is only a milligram in a thousand million years you must admit that the possibilities for the substance are great."—New York Sun.

Shall Girls Ride Astride On Horseback As Do Men

A Cotroversy is now Raging in England over the Use of the Cross Saddle---Fashion Not in Favor of Innovation.

THE advantage of the cross-saddle for women is being much discussed in England; but, so far, opinion does not seem to be in favor of the innovation.

English women and Irish women are the best horsewomen of the world, and the number seen in the hunting field increases every year. Even fifty years ago, few English women rode to hounds, and at the beginning of the century the woman who did follow the hunt was regarded askance by conventional society. Today at many a meet, the women equal the men in number, and it is almost as much a matter of course that a woman should ride to hounds as that she should dance.

More and more, too, English girls are being trained to cross-country riding at an early age. Girls of 14 and 15 are no uncommon sight on the hunting field, and many of them ride as straight and as pluckily as any of their older sisters.

Miss Betty Renton, though only 14, has followed the Tiverton hounds and the Devon hounds regularly for three years, and will take many a fence or ditch that will give a hard-riding man pause. She has several fine hunters of her own and understands horseflesh almost as well as her father. She is only one of the host of young girls from England's best families who are making records on the hunting field.

The theory is that if, as was formerly the custom, a girl does not ride to hounds, until after she comes out, she is hampered during her first few seasons by her poor riding, and misses innumerable good times, in addition to lacking one of the accomplishments most admired by English men. On the other hand, some doctors deplore hard riding by children and insist that it is injurious to the growing school-girl's health.

It is in connection with these youthful riders that the arguments for and against the cross-saddle are raging. The older English women do not take to the cross-saddle, as have done so many American women. Occasionally with the Devon and Somerset stag hounds several women may be seen riding astride, but that is almost the only instance of the custom in all England.

The opposition comes, not from any conventional prejudice or fear of offending proprieties, but from a prevalent conviction that a cross-saddle will be a drawback rather than an aid to women's success in the hunting field.

Experts point out the fact that the percentage of women thrown is far less than that of the men—that a stumble on landing which would throw nine out of ten men from the saddle, will seldom unseat a woman; that even when a horse falls, unless he rolls over, a woman who is cool and does not lose her nerve can often keep her seat while the horse scrambles to his feet.

All these things are accounted for by the splendid grip upon the saddle given a woman by her side pommel. It is admitted that, in case of a really bad fall, a woman stands less chance of coming off uninjured than a man, because she is hampered by skirts and the pommel; but such incidents are, fortunately, very rare.

In the case of the young and growing girl, matters are rather different. Many doctors contend that much riding on a side-saddle induces a tendency to spine curvature and hinders symmetrical development of the body.

Other authorities declare the cross-saddle is more inimical to the young girl's health than the side-saddle. A third class, not so much concerned about the girl's health as about her future social success, insist that the girl trained to a cross-saddle is as awkward and helpless when in her first season, she changes to a side-saddle, as she would be if she had never ridden at all.

The controversy rages fiercely. Meanwhile some souls, bent on compromise, suggest that all difficulties may be solved by having the young girl ride alternately on the left and right side. This is feasible and would, at least, dispose of the unsymmetrical development objection. Reversible saddles are easily procured, and a safety riding skirt for girls has been patented which allows its wearer to ride on either side of the saddle.