shock. The man on the by the one on the ground oar easily slide up a large smooth, wide hardwood his will be surprised what can be handled in this way.

FOR SOUTH AFRICA.

usand Men Will Soon be on round-Corps Selected. ted that 70,000 British sot. be employed in the Trans. t the estimated expenditure from seven to ten million rling. The following bat. either there or under oruth Africa:-

alion Queen's Royal West ment-Lieut.-Gol. E. O. F From Portsmouth. alion Royal Fusiliers, 7th-G. C. Donald. From Alder.

alion Devonshire Regiment. .-Col. G. M. Bullock. From lion West Yorkshire Regi--Col. F. W. Kitchener

lion Royal Irish Regiment . H. W. N. Guinness. From lion Royal Scots Fusiliers

lion Royal Welsh Fusiliers -Col. C. C. H. Thorold proke Dock. lion Cameronians, Scottist -Lieut.-Col. E. Cook. From

alion Royal Inniskilling 27th-Lieut.-Col. T. M. G From Mullingar. alion the Black Watch planders, 73rd-Lieut.-Col

de. From Aldershot. lien King's Royal Rifle -Lieut.-Col. R. G. Buchan-From Kilkenny. tion Durham Light Infat.

ieut.-Col. A. L. Woodland. ion Highland Light Infanol. M. F. Reid. From Dev.

lion Seaforth Highlanders, -Col. J. W. Hughes-Hallett, rom Fort George.

lion Royal Irish Fusiliers, ion Connaught Rangers,

ion Argyll and Sutherland , 91st-Lieut.-Col. J. H. From Dublin.

ion Royal Dublin Fusiliers,

. G. Brooke. From Ath-

.-Col. G. A. Mills. From n to the above the South e under Sir Redvers Bul-

clude four of the Guards' ind one of the Rifle Briving battalions are either

rica or en route there:on Northumberland Fusiieut .- Col. C. G. C. Money,

on King's Liverpool Regilieut.-Col. S. L. Millar. ion Devonshire, Regiment, H. Yule.

tion Leicestershire Regi-Lieut.-Col. G. D. Carleton. ion Gloucestershire Regi-Lieut.-Colg. E. P. Wilford. lion Border Regiment, H. E. Hinde.

on Loyal North Lancashire th-Lieut.-Col. R. G. Keke-47th-Lieut.-Col. R. G. ion Royal Berkshire Regi-

Lieut.-Col. C. Evans-Gor lion King's Royal Rifle -Lieut.-Col. R. H. Gun-

lion King's Royal Rifle -Lieut.-Col. H. Gore on Manchester Regiment

Col. A. E. R. Curran. ion Gordon Highlanders Col. W. H. Dick-Cunyng

on Royal Irish Fusiliers Col. F. R. C. Carleton. on Royal Munster Fusili leut.-Col. E. S. Evans. on Royal Dublin Fusiliers -Col. C. D. Cooper. on Rifle Brigade-Lieut Metcalfe.

TOYAGE OF LIFE. e the ocean wide, tant ebb and flow; ships upon its tide. to and fro; g for some lovely isle

e setting sun, pathway seems to smile s course we run. ail well from first to last winds all the way. anchorage is cast

me tranquil bay; short scarcely leave the short clouds hover nigh. e angry tempests roar, nings rend the sky. im our sails aright.

shall overwhelm. ave and do the right, direct our heim; he waves, though moun our triumph-song, igh, the haven nigh our ships belong! Toronto.

THE STORY OF THE TROUBLE FROM THE COMMENCEMENT.

of Review of the Causes Which Have Led Ip to the Present Enfortunate State

In the year 1836 an Act of Parliagent carried the jurisdiction of the minial laws of the Cape Colony as r north as the 25th degree of latieds, and in 1842 this Act was followally a proclamation of actual soverwanty over the whole of the territoris up to the same limit. The Home Brernment, however, took alarm, and uncelled the proclamation, but at the gne time asserted that all white men asiding within the limits were to be marded as British subjects. Had not the proclamation of 1842 been cancelad many difficulties by which we have since been confronted could nevg have arisen. British territory now mends far north of latitude 25, but instead of a complete section of the african continent being solely our we are obliged to recognize the rights of Germany and of Portugal, s well as of the Boer Republics.

In 1848 the territories now known -Col. E. E. Carr. From 13 the Orange Free State and the fransvaal were annexed, in accordince with a fresh, political idea, and THE RESULT WAS A WAR,

> in which Sir Harry Smith inflicted a decisive defeat upon the Boer forces at Boomplaatz, and the annexation was then submitted to. In 1852, howerer, the political countenance develmed yet another change of exwassion, and against the wishits population, Orange Free State was compelled to beome an independent Republic, whilst 1 separate Convention, known as the Sand River Convention, was concluded which they also, subject to a few trif-

In reservations, became an indepen-

The annexation of the Orange Free State was not finally cancelled until 184, but to all intents and purposes he undesired freedom was granted -Col. J. Reeves. From from 1852, when the determination of the British Government was announced. From this time until 1877 matother policy. Independence having been granted to the two Boer Republics, or in accordance with the express deare of the inhabitants. As the year 1876 drew to its close

the Transvaal was gradually drifting into a condition of

HOPELESS CHAOS.

The Republic was at war with Sekutuni, but had failed to achieve any success whatever. All fighting worthy of the name had been done by Volun-Mers, or, as they were irreverently to almost any nation, but probably English and American for the most

messes, and the Volunteers were not M. Berthelot: mificiently numerous to make good my advantages that they temporartontemptible a foe as the Maccatees Was comparatively easy, but to remain on the hill without water or supplies, was impossible, and the inevitable refirement that followed in every case Was always attended by heavy loss. Thus matters came to a standstill. the Treasury became insolvent, and the pay of the "Volunteers," as well the subsistence of all the forces made alike, could no longer be provided. The Boers dispersed to their homes, and the Volunteers would probably have done the same as a body, but that so Many of them had no homes to which bey could betake themselves. At this acture Sir Theophilus Shepstone was Ent to Pretoria, escorted by a small etachment of the Natal Mounted Po- ous food." Ice, and had instructions to

DEVISE SOME REMEDY a state of affairs which constitut-Ma danger to all South Africa, owing to the unrest created amongst the Many powerful native States.

annexation of the Transvaal ani provided that a majority of the bitants should be found to favour such a step. The column employed in tider to give effect to this tetermination was under the command of Colonel C. K. Pearson, the Commandant of Natal, and consisted the 1st Battalion 13th Prince Al-

tert's Light Infantry, about 750 krong with two 7-pounder guns, and Malf-a-dozen sappers. All sorts of Warlike rumours were bruited about, b. the column nevertheless reached Pretoria without encountering anything more formidable than deputations with addresses of welcome. Indeed, the only incident of any inbrest was the arrival in the camp

tear Laing's Nek of a GRAND OLD ENGLISHWOMAN, to over eighty years, who was driv- will be established. might " fifty miles in order that the The only way to avoid the world before the Union Jack once more famine for bread is to increase the before she died. This was an affect- stores of available nitrogen. spectacle. The old lady was a The deposits of natural nitrogen are the who witnessed her genuine en- the increasing needs of agriculture. has not one single indication nor is it demand.

likely that any would to this day have been shown had the Volksraad been convened and self-government continued.

In this matter faith was undeniably broken. The Boers, who had looked on without a murmur when the British flag was hoisted in May, 1877, became disaffected, and in the following December 1,500, of them, under Kruger and Joubert marched to Pretoria to demand independence. The garrison at this time consisted of only about 350 men of the 13th Light Infantry; but these were veterans, not boys, and the 1,500 malcontents feared to come to blows. A meeting was held, resolutions condemning the annexation were passed, shots were fired in the air-but nothing further occurred. The Boers dispersed, and Sir Theophilus issued a proclamation promising condign punishment to any persons who might dare thus to challenge his authority in the future. From this time there was peace, until the disaster of Brunkers Spruit inaugurated

THE WAR OF INDEPENDENCE. Further disasters followed, and the British Government, convinced that the Boers really desired independence, proceeded to grant it. It may safely be predicted that had self-government

been granted simultaneously with the

annexation, there would have been no The present crisis has arisen not so much in consequence of the franchise question as of the refusal of the Boers to recognize British suzerainty. There is an obvious difference between the existence of vassal States having internal independence within our sphere of influence in South Africa, and the assumption of sovereign power by those States in rivalry with the paramount power. It is in order to remove any doubt as to which is to be Some ten years ago it was discovered the ruling race in South Africa that British forces are now being despatch-

BACTERIA WILL NOW BE USED TO AID THE FARMER.

with the Transvaal settlers, under Before Long He Will Inoculate His Fields and Be Certain of Immense Crops-The Industry Is Still in Its Infancy, But the Idea Was Been Demonstrated.

When it gets so that a farmer can go out and vaccinate his potato field, thereby insuring a good crop, it must be admitted that bacteriology has advanced to an extent that calls for wonder and admiration. Perhaps inoculate would be a better word to use in ters were permitted to "drift," and this connection, for it is not vaccine indeed, there was little reason for any matter which the farmer is recommended by the scientist to inject into resumption of sovereignty could his fields, but a microbe which prowarcely have been justified, except un- duces nitrogen for the use of the crops. der very extraordinary circumstances Such bacteria, produced by what is known as "culture," by being artificially propagated, are already on the market, and though the industry is still in its infancy, the feasibility of producing rich soils by inoculation has been demonstrated.

Some time ago Berthelot, the celebrated French chemist, predicted that the time was coming when the chemist termed "Filibusters,"-men belonging in his laboratory would manufacture unlimited quantities of nutritious food for mankind, and the occupation The Boer "Commandos" declined to of the man with a hoe would be gone. take any part in storming rocky fast- Dr. H. W. Wiley says of the dreams of

"This savant boldly proclaimed that W gained. To mount a hill held by so synthetic chemistry had already made such progress as to warrant the expectation that in days not far distant the vocation of the geoponist would be gone. According to his philosophy, the areas devoted to agriculture would be planted to forests and parks and the whole world would be

A PLEASANT GARDEN,

in which men, no longer doomed to earn their bread by the sweat of their brow, would roam at will, while the chemist in his laboratory would supply them with unlimited stores of nutriti-

Sir William Crookes, president of the British Association for the Advancement of Science, in an address before that association, to quote Dr. Wiley lative populations by the successes of again "again raised the ghost of starpetty chief, for such Sekukuni ac- vation, which has been periodically was in comparison with the flouted before men since the times of Malthus. According to Sir William, Tas to be arranged as a preliminary the starvation which is imminent to hep to British action against Seku- humanity will be due to the scarcity of wheat, and the failure of the wheat crop will be due to a lack of assimilable nitrogen."

Sir William's argument was briefly as follows: Wheat is the great source of bread

of the most advanced and progressive nations of the world. practically as great as it ever can be. The natural fertility of the wheat

greatly increased.

those who diment of patriotism, and not large enough to supply indefinitely it Of h are unlikely ever to forget The activity of nitrifying organisms Of heatility, open or veiled, there also will not be sufficient to meet the THE SOLE RESOURCE,

therefore, seems to be the chemical discovery of fixing nitreogen, and to this end the electrical process seems best adapted, and probably the vast energy of the Niagara water power might be devoted to this purpose. Between the dark picture of a starving world whose only hope is in Niagara Falls, as set forth by Sir William Crooks, and that fascinating picture portrayed by Berthelot, are the great nitrate beds of Chili, and who shall say how many more yet undiscovered. and more than all this, new and rapidly developing knowledge of inoculation, which practical chemistry is now

getting in working order. For years and years the farmer has inoculated his fields, without knowing it, when he planted in a growth of clover, peas, beans or other plants of the kind known as leguminous.

He knew that by raising such crops and plowing them in the fertility of his field was increased, and now the scientist comes along and tells him why. It seems that these plants are infested with little animals so small as to require a microscope to see them that they are busy night and day putting the nitrogen of the air into such shape that it can be used by plant life. Dr. Wiley say's of these little workers: "In so far as is definitely known the leguminosae, that is, the family to which clover, peas, beans and similar plants belong, are the only plants capable of sustaining the parasitic life of the nitrifying bacteria. From time immemorial it had been noitced that such plants often had small nodules on their roots from the size of a shot to the size of a pea. These were formerly supposed to be evidences of

A DISEASED CONDITION.

that these nodules were inhabited by bacteria which have the faculty of converting free nitrogen into forms suitable for plant nutrition. Thus, what was supposed to be the effect of a disease is found in fact to be a most useful form of bacteria."

The discovery of these organisms has led to a systematic cultivation of them with a view of supplying them to soils which are deficient in them. These little animals are supplied to the farmer in small bottles and are prepared for use by stirring them in with a mass of moist rich earth. This causes them to multiply rapidly. When they have multiplyed sufficiently the earth in which they are is scattered over the field into which it is desired to introduce them. Besides these bacteria, which work to give life to peas, beans, clover, and the like, there are other bacteria laboring in the soil to give nitrogen in a proper form to general crops, and they also have been caught, classified and cultivated.

One species of this bacteria is known as alinite, and is said to be an efficient germ in transforming free nitrogen into a chemical combination, especially adapted for the nourishment of cereals. Dr. Wiley says that this alinite has been subjected to extensive experiments by foreign chemists, but Dr. Wiley is of the opinion that the practical value of the substance must be left for future experimental study. When alinite is used to inoculate a field it is mixed with water and the infusion applied to the seeds before they are sown. From 500 to 1000 individual microbes are said to adhere to each seed. Theoretically considered, it is logical to expect that if with the seed is planted a large number of organisms capable of rendering available for the use of the germ and the plant which is to grow from it the nitrogen already contained in the soil and endowed with the power of absorbing more nitrogen from the 'air the young plants will begin their growth with a vigor and rapidity having utterly departed. which will assure

AN ABUNDANT HARVEST.

beans-in short, the leguminae-the duce fair crops.

In order that soils should be inoculated with just the bacteria they need to increase their productiveness, it is necessary to have samples of these soils, and thus a new branch of agricultural research has been established. Dr. Wiley, who seems to have taken up this study in earnest and to have achieved better results than any of the foreign experimenters, says: "For several years the chemical division of the United States Department of Agriculture has pursued studies of this description. From all parts of the country samples of soils have been secured, not merely for physical and chemical examination, but also for the purpose of studying the nature of the nitrifying organisms. To this end a new method of precedure had to be invented and tested. The problem of securing samples free from contamination with other organisms was one of considerable difficulty. This problem we have endeavored to solve in the manner described below:

"Sterilized sampling tubes are prepared and covered with rubber caps The tube is made of brass, beveled at one end so as to easily enter the soil. The tube, rubber caps and the rubber balls, which are placed in them to pre-The area planted to wheat is now vent the cutting action of the edges of the tube, are subjected to a steriliz- pected earlier. ing temperature for an hour or two fields is diminishing rapidly, due to on three successive days. Any spores loss of available nitrogen, so that the which may have escaped destruction average product per acre can not be in the first sterilization are permitted to develop and are destroyed in in the population of the earth will blunt end of the tube is filled with a reach a point when all the wheat will plug of sterilized cotton, which serves be eaten, and actual hunger for bread to permit the egress of the air when the sharp end of the tube is forced into the soil to secure the sample."

GETTING AT THE FACTS.

My sweetheart gave me a pair of silver-backed brushes that cost \$25. price them? No; but I had to pawn them.

THEN YOU MAY SEE A MAGNIFI-CENT DISPLAY OF METEORS.

s Seen But Once in Every Thirty-Three Years-Thousands of the Bright "Shoot ing Stars" Will Turn Night Into Day for All North America.

A grand celestial parade of meteors is scheduled for November 14, and three years must elapse ree the last meteor in the procession passes out of sight. When the path of the meteors crosses that of the earth the earth passes obliquely through the stream, and is exposed to the downpour of meteors for several hours.

We greeted a few members of the advance guard last year, we expect to count them by the thousands this year, and look forward to a view of the rear guard in the year 1900. The members of this celestial army are known by the name of the Leonids, since their paths traced backward all radiate from a point in the constellation Leo. Their uniform is green and blue, and they march in double quick time, with a speed averaging 26 miles a second.

As it happens, we are hastening to meet the Leonids, and as a result of east to west across the sky with enorthe combination of their speed with ours, which is 19 miles a second, that of the Leonids is equivalent to 40 or 50 miles a second. They make their | them trains of emerald green or clear presence known to us by means of vivid and persistent flashes of light, as they dash recklessly into the air surrounding our planet and bombard us with their celestial artillery. Thus we are "Pelted with star dust, with meteor balls." HUNDRED THOUSAND MILES WIDE

in widely extended ranks, about 100,-000 miles across, by a concerted plan along a prescribed tract, nearly two thousand million miles in span, under orders sealed perhaps forever to human intelligence. At every return there are desertres from the ranks, worn out by this tremendous journey, lasting over 33 years. On the coming occasion there may be some Leonids who enjoyed a brief glimpse of Planet Earth as they hastened by it on their way in 1853 and 1856, and at the parade an 1859 they muy decide to become bet-

ter acquainted with our planet. As a consequence the companies and columns of the Leonids will be broken and gaps left by the deserters, but their places are soon taken, and the companies and columns become as compact as ever. Meanwhile the ardor of the deserters

diminishes somewhat as they plunge into the shield of air protecting us from such intruders; they encounter numberless obstacles in the way, partweer the deserters from the ranks of meteors and the particles, resulting im victory for the latter and disastrous defeat for the former.

five miles overhead, then they fade been in the system the more widely away crumbling into dust, their glory | scattered will be its particles.

At the coming celestial parade we shall be on the watch for such delin-Even Prof. John A. Meyers, who is | quents, sentries will be on guard armrather doubtful of the success of in- ed with cameras, with which pictures oculation applied to land, admits that | will be taken of the meteors. The in the case of plants like clover or cameras must be focused and ready A young lady of noble family is deterfor service from midnight until dawn, soil which would not before bear crops and it is hoped that many captures of these would, after inoculation, pro- may be made during the "wee sma hours ayont the twal."

VISIBLE TO ALL!

There will not be the exorbitant demand for seats on grand stands at the celestial parade, for so long as we by the sheen of a healthy skin, having look in the right direction at the right time the display will be visible for all. Before midnight the meteors will appear shooting upward from the northeastern horizon, but later on, as the radiant point approaches midheaven, 'the sky," as an old lady expressed it | precious stones and precious metals. in speaking of the meteoric shower of 1883, "will be like a great umbrella." The predicted time of maximum of the Leonids is November 51, at 18 hours Greenwich mean time, and as the Leonids will not visit us again for 331-4 years, no pains should be spared to secure the best possible observations. The most useful observations that can be made by amateurs are those which will serve to determine the number of meteors visible per hour throughout the entire duration of the shower. In this way many valuable observations were secured last year at the November display from observers in all parts of the The most important time for obser-

vation is from midnight until dawn, as comparatively few meteors are ex-

DISPLAY IN 1833.

In 1833 there was a remarkable display of the Leonids, which has been described as follows:

"On the night of November 12-13, In about thirty years the increase the successive sterilizations. The 1833, a tempest of falling stars broke to ask you; although of ancient origin over the earth. North America bore it is ever new, andthe brunt of its pelting. ! From the Gulf of Mexico to Halifax, until day- was at a minstrel show last week. light with some difficulty put an end to the display, the sky was scored in every direction with shining tracks and illuminated with majestic fire balls. At Boston the frequency of one speak of the white horse and th meteors was estimated to be about red-headed girl now. half that of flakes of snow in an Were you mean enough to go and average snowstorm. Their numbers, while the first fury of their coming lasted, were quite beyond counting, dyed.

but as it waned a reckoning was attempted, from which it was computed on the basis of that much diminished rate that 240,000 must have been visible during the nine hours they continued to fall."

It was on this occasion that the remarkable fact was noted that all the metors seemed to come from the same part of the sky. Traced backward, their paths were found to radiate from a point in the constellation Leo. Humboldt had drawn attention to the same fact at the display of Leonids in 1799, but no reasoning was founded on the observation. However, in 1833 the matter claimed the attention of Prof. Twining and Denison Olmstead, who was at that time Professor of Mathematics in Yale College. They suggested that the "radiant" indicated the existence of swarms of meteors revolvng in regular paths around the sun. The suggestion was not accepted at the time, but the discussion was again renewed by Prof. Newton, in 1864, and he predicted the return of the meteoric swarm every 33 1-4 years. In fact, he announced the next display for 1866, and the prediction was fulfilled and repeated in 1867, the swarm requiring nearly three years to pass a give en point.

DISPLAY IN 1866

At the display of Leonids in 1866 Eu rope seemed the main target of the celestial projectiles, and observers were numerous and forearmed. "Dense crowds of meteors, equal in luster to the brighest stars, and some rivaling Venus at her best, darted from mous apparent velocities and with a certain determination of aim, as if let fly with a purpose and at some definite object. Nearly all left behind blue light, which occasionally lasted many minutes before they shriveled and curled up out of sight. The maximum rush occurred a little after 1 o'clock on the morning of November 14, when attempts to count them were overpowered by their frequency. But during a previous interval of seven minutes and five seconds four observers reckoned, 514, and during an hour 1,120. Before daylight the earth had Battalions of Leonids are marching fairly cut her way through the star bearing stratum and the ethereal ro kets' had ceased to fly."

Renewed interest was now felt in meteors, and a suggestion made by Prof. Kirkwood in 1861 was verified: "May not our periodic meteors be the debris of ancient but now disintegrated comets whose matter has become distributed round their orbits?"

The suggestion was confirmed by Schiaparelli, of Milan, who a few weeks after the Leonid shower advanced the remarkable statement that the August meteors were moving in the same path as Tuttle's comet of 1862. Shortly after Oppolzer published his oribt of Temple's comet of 1866, and at the same time Leverrier published his orbit of the Leonid meteors, and they were found to be the same. In 1872 a relationship was traced between the Andromedes, a display of meteors occurring on November 27, and Biela's defunct comet, and the inference was that the meteors were pursuing the same path as the comet.

Their claim to membership in the solar system is now fully established, and other meteor systems show a similar relation to the paths of other comets. Prof. Alexander Herschel ticies of air, and a battle ensues be- finds four or five meteor swarms. which have a "comet annexed," as it were. In the case of the Leonids and Andromedes the meteor swarm follows the comet, while some authorities For a few brief seconds the van- are of the opinion that the comet itquished are surrounded by a blaze of self is in the densest part of the light, until they reach a point about swarm. The longer the comet has

THE MOST COSTLY DRESS.

Of course it comes from Paris-the home of strangely extravagant ideas. mined to get up a costume far more gorgeous than any ever before worn by woman. She is now having the designs made according to her notions. She was acquainted with the theory that added brilliancy is given to jewels often noticed the fact that diamonds and pearls flash most brightly on shining necks and shoulders. She has therefore given orders for an entire costume to be made of mothing but

The pearls, diamonds and rubies are to be so set that they will be in immediate contact with the wearer's skin. The lower part of the costume will be almost solid, the gold and silver being beaten very thin so as to be extremely pliable and light. The arms. hands, neck and shoulders are to be almost covered with loops of pearls, stars of diamonds and rings of all kinds. The breast will shine with stars and crescents of rubies, emeralds and diamonds.

The rest of the body will be covered with pliable bands of woven gold, on which jewels will glisten like dewdrops. Many of the brilliants will be purchased in the rough, and cut into the shapes which best accord with the places in which they are to be set. That the costume when finished will cost a large fortune goes without say

WHERE SHE HEARD IT.

He.-Miss Clara, I have a question She.-Oh, never mind asking it. 1

NOT DEAD.

Crimsonbeak .- You never hear any Yeast.-No; I guess the white horse have all died. Perhaps, it's the girls who have