

Visibility in Warfare Is the Latest Problem Facing the Scientists

A regiment of soldiers were to march through the streets of one of our cities in a uniform of checker-board pattern, arranged in squares of bright red, green, and yellow, it would create, to say the least, a popular sensation.

Yet it is by no means certain that this style of costume, or something like it, may not be adopted by fighting men in some future war—not, be it understood, that they may strike the eye, but, on the contrary, that they may not be seen at all.

One of the oddest of the new devices of the present war is the combination of optical illusions for cheating the ever-watchful eyes of the enemy, and in this line the most curious expedient is that of painting things out of sight. This, for example, an effort is made to render the guns invisible by scattering the colors of the primary colors over the muzzles and their carriages. The war departments have been making experiments of the same kind, the great guns and their concrete emplacements as well being painted red, yellow, green, and blue. It is found that by this means they are rendered much less distinct as targets. The guns and gun carriages of the field artillery have likewise been experimentally painted in stripes of green, yellow, and red; and, thus chromatically adorned, they are found to be actually invisible at a distance of only 1,000 yards.

The experiment in question, in the European War, has had its most important usefulness in making guns less visible to enemy aviators flying overhead—an all-important aim in up-to-date artillery work being to prevent the foe from ascertaining the location of batteries. A battery once located may be destroyed by concentrated gunfire. The daubs of color confuse the eye of the observer in the aeroplane.

Such a method, however, is very crude. It represents only a first attempt in the development of a new idea which is destined later on to be applied in a scientific way, in accordance with certain well-known principles of optics. The daubs of paint confuse the eye, but if the colors were properly employed they would make the guns actually invisible.

Daylight, of course, is made up of all the colors of the rainbow mixed together. In other words, the colors properly mingled make no color. It follows that a gun and its carriage correctly painted would have no visibility at all at any considerable distance. Neither, for that matter, would an airplane flying overhead. We may have before long invisible flying machines.

Warplanes and military balloons nowadays are painted light gray, to harmonize with the sky and render them less visible. But a gray object in the sky can be seen; if of no color it cannot be seen, because daylight is of no color.

The only problem is so to arrange the colors that, optically, they shall mingle. This cannot be properly accomplished by a mere scattering of daubs of paint. The thing has to be done on scientific principles. Whether it would be better to adopt, for the purpose a checkerboard pattern or a series of horizontal, vertical, or wavy parallel narrow stripes remains to be determined by experiment.

Probably any of these arrangements would serve the purpose. The result would be a chromatic scheme corresponding in effect to a rainbow. The colors of a rainbow mixed together make no color. So, in like manner, the colors applied with paint in the manner described would so mingle to the eye of an observer at a moderate distance that the object (gun, airplane or what not) would be invisible.

One naturally asks: How might this idea be utilized to lend invisibility to ships? The sea is blue. The sea is green. The sea is of varying tints, according to the color of the sky, which it reflects with its own modifications. But, generally speaking, the color of the sea is a mixture of violet and green; and it is urged by one theorist on the subject that ships could be made at least relatively invisible by painting them with a checkerboard or other pattern of these two colors.

Warships nowadays, to render them as little conspicuous as possible, are painted gray; so, likewise, are guns and military automobiles. The German soldier is uniformed in "mist-gray." But gray means obscurity, not invisibility. To obtain the latter the armies and navies of the future may have to resort to the most brilliant color patterns for the concealment of the fighting man and the fighting machine from hostile view.

Wrote a Few Letters.

The kirk in a certain Scottish village was in urgent need of repair, and Sandy McNab, a very popular member, had been invited to collect subscriptions for the purpose. One day the minister met Sandy walking irresolutely along the road. He at once guessed the cause. "Man, Sandy," he said earnestly, "I'm sorry to see ye in this state." "Ah, weel, it's for the good o' the cause," replied the reluctant happily. "Ye see, meenister, it's a' through these subscriptions. I've been down the glen collectin' fun's, an' at every house they made me hae a wee draple." "Every house! But—but—surely, Sandy, there are some of the kirk members who are teetotalers?" "Aye, there are; but I wrote 'em these!"

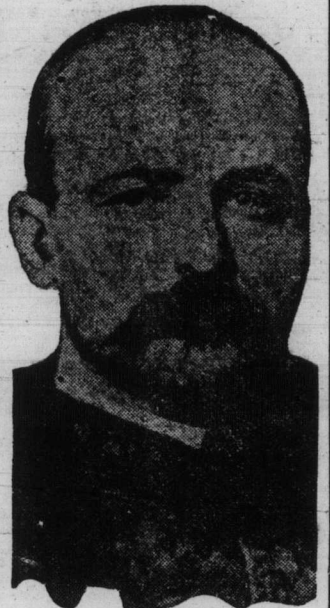
The Dominican Republic.
According to Government figures, recently made available, the population of the Dominican Republic at the end of 1915 was 798,466.

Count Stephen Tisza Whose Political Motto Is "All for the State"

COUNT STEPHEN TISZA, Minister-President of Hungary, has been alternately the most hated and the most loved man in his nation. Out in the Balkans, they blame him for what the rest of the world brands the Kaiser. Steeped in Machiavellian lore, "all for the state," he has for years been one of the most fascinating and perhaps sinister Willies in European statecraft.

Eleven years ago, January 5, 1905, after a long political deadlock and an extremely reactionary extra-parliamentary regime of the Tisza Government in Hungary, all the opposition parties united, mobbed the parliament, passed the military guard, and demanded Tisza's resignation. His Ministers resigned hastily. None came to take their places, and until June 17, when King Franz Joseph reluctantly dismissed him, he ruled Hungary iron-handed and alone. Letters by the thousand threatened him, revolution muttered in the streets of Budapest, assassination was several times attempted, he was spit on by the crowds that jeered at him. And yet when he retired, even the Opposition granted he was the most courageous man in the country.

He came back on June 10, 1913, still distrusted and disliked by Liberal and by pro-Russian Magyars, and for the greater part of the time up until August, 1914, his life was not safe on the streets. In August, 1914, students and populace hailed



COUNT STEPHEN TISZA.

him, bands played under his windows, adoring crowds followed him in the town, old Kossuth songs were revived in his honor. The steering-gear of Austria-Hungary was in his hand. Not since Count Andrássy's day, and not even then, had a Hungarian statesman been so dominant in the Dual Monarchy. It was known that his hand had been the hand to pen the dictatorial note to Serbia, and his popularity continues because it is now known that his were not the changes, but Count Berchtold's and Count Forgach's, which made the note too severe for Serbia's stomach. For Count Tisza is Bismarckian enough to have cautiously counted the costs.

His father before him, Count Kálmán Tisza, led Hungary for eighteen uninterrupted years, and trained his son consistently for statesmanship. Count Stephen Tisza arrived not by accident. He comes near being the only statesman in the Dual Monarchy with courage, experience, resourcefulness, and indomitable health. Garbed always in gloomy black, courteous but abrupt, dry and brief, he is not a come-hither figure. He looks a bit like Martin Luther, and he has the most celebrated racing stables in Hungary. Tall, almost gaunt, his gray hair is cropped criminally close. His eyes are pale gray and far-seeing. His face arrests you, the stern bones of the forehead and cheek, the straight, thin lips, the military carriage of his neck. No one recalls having seen him smile for years. And yet he is witty upon occasion.

A member of the consular corps at Budapest remembers discussing some little affair with him a few years ago. Both gentlemen kept their tempers and both were very much irritated. When he got home from the interview, the consular officer found a huge basket of fruit there before him "to make it up." Another remembers a Tisza sally during the embarrassing salt scandal of 1912, when the then Minister-President Ladislaus de Lukacs, figurehead for Tisza, was being fatally found out for his part in selling the salt monopoly. The Liberal papers called it spending booty when Mr. de Lukacs gave an official dinner to two hundred persons. The Balkan war was in progress, and the table at which Mr. de Lukacs and Count Tisza and the consular corps were seated gave itself over to a neutral discussion of national foods. The French Consul suggested that Hungarian foods were excellent, but perhaps rather piquant. Count Tisza spoke for the first time, glancing at Mr. de Lukacs: "Monsieur finds them perhaps too salty." The hit reached himself, at that, for his own brilliant mind had suggested the Salt Panama largely to provide campaign funds for his party, the National Working party.

On Count Stephen Tisza depends any move that Austria may make for separate peace.

RHEUMATISM WAS MOST SEVERE

Dreadful Pains All the Time Until He Took "FRUIT-A-TIVES."



MR. LAMPSON

Verona, Ont., Nov. 11th., 1915.
"I suffered for a number of years with Rheumatism and severe Pains in Side and Back, from strains and heavy lifting."

When I had given up hope of ever being well again, a friend recommended "Fruit-a-tives" to me and after using the first box I felt so much better that I continued to take them, and now I am enjoying the best of health, thanks to your remedy."

W. M. LAMPSON.

If you—who are reading this—have any Kidney or Bladder Trouble, or suffer with Rheumatism or Pain In The Back or Stomach Trouble—give "Fruit-a-tives" a fair trial. This wonderful fruit medicine will do you a world of good, as it cures when everything else fails. 50c. a box, 6 for \$2.50, trial size, 25c. At dealers or sent postpaid on receipt of price by Fruit-a-tives Limited, Ottawa.

Keeping Posted.

"I see Blinks always carries a volume of the encyclopedia with him to read on the train instead of a newspaper."

"Yes. You know he has three small children at home, and he makes it a point to try to answer all the questions they ask him."

An Extremist.

"Mrs. X. is a great stickler for form and ceremony, I understand."
"Mercy, yes. Why, that woman would insist on dressing up to entertain an idea."—Boston Transcript.

Judging From Experience.

"Pop, are bald eagles a distinct variety?"
"I can't say positively, my son, but I rather fancy a bald eagle is simply a married one."—Philadelphia Ledger.

To City, Town and Village Dwellers in Ontario

A Vegetable Garden for Every Home



IN this year of supreme effort Britain and her armies must have ample supplies of food, and Canada is the great source upon which they rely. Everyone with a few square feet of ground can contribute to victory by growing vegetables.

Four Patriotic Reasons for Growing Vegetables

1. It saves money that you would otherwise spend for vegetables.
2. It helps to lower the "High cost of living."
3. It helps to enlarge the urgently needed surplus of produce for export.
4. Growing your own vegetables saves labor of others whose effort is needed for other vital war work.

The Department of Agriculture will help you

The Ontario Department of Agriculture appeals to Horticultural Societies to devote at least one evening meeting to the subject of vegetable growing; manufacturers, labor unions, lodges, school boards, etc., are invited to actively encourage home gardening. Let the slogan for 1917 be, "A vegetable garden for every home."

Organizations are requested to arrange for instructive talks by practical gardeners on the subject of vegetable growing. In cases where it is impossible to secure suitable local speakers, the Department of Agriculture will, on request, send a suitable man.

The demand for speakers will be great. The number of available experts being limited, the Department urgently requests that arrangements for meetings be made at once; if local speakers cannot be secured, send applications promptly.

The Department suggests the formation of local organizations to stimulate the work by offering prizes for best vegetable gardens. It is prepared to assist in any possible way any organization that may be conducting a campaign for vegetable production on vacant lots. It will do so by sending speakers, or by supplying expert advice in the field.

To any one interested, the Department of Agriculture will send literature giving instructions about implements necessary and methods of preparing the ground and cultivating the crop. A plan of a vegetable garden indicating suitable crops to grow, best varieties and their arrangement in the garden, will be sent free of charge to any address.

Write for Poultry Bulletin

Pens are inexpensive to keep, and you will be highly repaid in fresh eggs. Write for free bulletin which tells how to keep hens. Address letters to "Vegetable Campaign," Department of Agriculture, Parliament Buildings, Toronto.

Ontario Department of Agriculture W. H. Hearst, Minister of Agriculture

Parliament Buildings Toronto

"Baby First"

Fry's Pure Cocoa

Best since 1728

After play or work in the crisp, wintry air nothing tastes so delicious as a cup of FRY'S Cocoa. Baby knows this. Big folk know it too. Fry's is ALL splendid, body-building nourishment; there is no waste, and it is in such soluble form that the system can immediately assimilate it.

Here is just about the cheapest, most enjoyable and most concentrated food you can buy today, but—

Remember, nothing will do but FRY'S

TORTURE OF PRISONERS.

Terrible Cruelty Inflicted on Captives by Germans.

Hideous in the extreme, and only equal in awfulness to the frightful horrors of the Inquisition of the dark ages, is the story told in a semi-official French communique of the tortures inflicted upon French, Russian, and English prisoners in German prison camps.

Examples are given, as follows: In reprisal camps of occupied districts of Russia this treatment has been applied with terrible refinements of cruelty. Thus, a mattress was at times placed between the stake and the head of the sufferer to render his position more exhausting. Sometimes the victim was tied bareheaded at midday with his face toward the sun, and with the points of barbed wire arranged so that they penetrated his chin.

At Landsbut seventeen Frenchmen were enclosed in a cage four metres long by three metres wide, exposed to all weathers. As a result, several of them went mad.

Punishment of the pit. The victim was forced into a hole in the earth, of an average length of one metre and eighty centimetres deep. The floor was strewn with sharp stones and the walls covered with barbed wire.

In Courland the lashing was administered on the loins of prisoners. At Stargard on Sunday mornings the wives of officers and other persons were invited to witness the bastinado.

Using Artificial Limbs.

Some of the wonders of physical reconstruction that are being achieved in the treatment of disabled soldiers in France are described by Captain Sir Henry Norman, M.P., in a special report to the Secretary for War for Great Britain. Particularly successful is the work of Professor Jules Amar, to whom, as he goes down the street near his hospital in Paris, the women smile, and say: "That's the man that gave my husband his arm back."

On the day of Sir Henry Norman's visit there were in the laboratory three one-armed men, who are earning 6s. 8d. a day as fitters. One of them while waiting amused himself by turning on a lathe little brass shells, as souvenirs, as well as any turner could have done.

Professor Amar offered a cigarette to one man whose arm had been amputated below the shoulder. Sir Henry Norman was about to take a cigarette from his own case in order to hand it to the man, who, saying: "Pardon me, I can help myself," proceeded to take one with his steel hand. Placing the cigarette in his mouth, he selected a match from a box, struck it on the box in his sound hand, and lighted the cigarette, holding the lighted match in his steel hand.

A second man, using his artificial hand, grasped the hand of Sir Henry Norman, and shook it warmly. The third, whose arm was amputated above the elbow, picked up a needle from the table with a small pair of dissecting forceps. Afterwards the men gave an exhibition of turning and filing metal and wood-drilling with a sensitive bit.

The motions of these wonderful artificial limbs are controlled, through straps and cords, by movements of the muscles of the chest and back.

Plough Up Grass Lands.

The Scottish Department Committee on Food Supplies report that there are about 1,500,000 acres of permanent pasture in Scotland and 1,500,000 acres in temporary pasture. Much of the permanent pasture is only suited for grazing stock and certain areas also of grazing land are unsuitable to break up, but, it is added, in the hands of both farmers and occupying owners there are many acres which, in present circumstances, should be brought under the plough. The report considers that steps should be taken to find out what land now in grass is suitable for growing grain and other crops, and to secure that it be cultivated. Also that steps should be taken to cultivate lands now let as grass parks and home policies, where the ordinary organization of a farm does not exist, it also recommends that when deemed advisable, the Board of Agriculture for Scotland, by themselves or their nominees, should enter, occupy, and cultivate such lands.

Honors for Three Sons.

A record of three sons out of four on service having won distinctions is furnished by the family of Mr. and Mrs. Nasmyth, of Weybridge, Surrey, England. Lieut.-Commander (now Captain) Martin Nasmyth, the second son, won the V. C. for his exploits in a submarine in the Sea of Marmora, where he destroyed seven Turkish ships in addition to driving another ashore, and then returned to torpedo a Turkish transport. Captain Arthur P. Nasmyth, the eldest son, gained the D. S. O. for displaying great courage and initiative in organizing and leading a successful attack; and Major Reginald Nasmyth, the youngest son, has been awarded the Military Cross. The fourth brother is Lieut. Sydney Nasmyth, who joined his old territorial unit at the outbreak of war and is at present in India.

A Good Sleeper.

The tortoise is a great sleeper. London Spectator has a story of one which was a domestic pet in an English house. As his time for hibernating drew nigh, he selected a quiet corner in the dimly lit coal-cellar, and composed himself to sleep. A new cook knew not tortoises, in a few months the tortoise woke up and sallied forth. Screams soon broke the kitchen's calm. On entering that department, the lady of the house found the cook gazing in awe-struck wonder, as she pointed to the tortoise: "My conscience! Look at the stone which I've broken the coal with!"