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A PAINLESS WAY OF PAYING WAR DEBTS

By Dr. Edwin E. Slosson

When a man finds himself overwhelmingly in debt and unable even to pay the interest, he naturally thinks of realizing on his real estate, especially if he owns more land than he can work. Why should not a nation do the same?

France, for instance. France is land poor. The country taken altogether is larger than the United States, fifty-four per cent larger. France has extensive territories in Africa, Asia, America and Oceania which she has neither the men nor the money to develop. She has debts that she is too poor to pay.

Among her chief creditors is the United States and among her scattered parcels of property is one which is valueless to her but would be of great value to us, that is, French Guiana. This is about the size of Maine, mostly virgin territory, and largely unpopulated. Only about one twenty-fifth of one per cent. of the area is under cultivation. It is rich in natural resources, mineral and agricultural, yet the French make no use of it except as a penal colony and are likely to abandon that. Few Frenchmen live there except the convicts and their keepers, so there would be no violation of local patriotic sentiment in its transfer to a foreign flag. If we should accept their territory in lieu of all France owes us we would be paying $156 an acre for it, an absurdly extravagant price, yet we could afford to make a very considerable reduction in our bill against France for it would be better to have something tangible rather than rely upon pormises already partially repudiated.

Great Britain alone among our debtors is paying up yet she finds the burden of taxation almost intolerable and should be glad to be relieved of part of it by the cession to us of British Guiana. This is larger and richer than the French, yet is unprofitable to the mother country. It is larger than Utah but less than two per cent. of it is occupied andless than a quarter of one per cent. under cultivation. Only four per cent. of the scanty population is of European origin. We could not afford to cancel all that England owes us in exchange for British Guinana for that would figure up about $70 per acre, yet we paid Denmark $500 an acre for the Virgin Islands.

That France and England could get relief from their heavy obligations by selling to the United States their surplus territory in and about the Caribbean Sea, has been suggested by Professor Charles Gide of the Paris Law Faculty and by Lord Rothermere, brother of Lord Northcliffe. We should hesitate to take at any price the West India islands for they have scant area and dense population, but the Guianas are the oppostie and rather resemble the North American continent when we took possession of it. Under American administration and by means of American machinery the Guinanas could be made a source of supply for petroleum, sugar, rice, rubber, beef, hides, lumber, hemp, coconut oil, cocoa, fruits, and alcohol for motor fuel. This is almost the only undeveloped territory area of all the immense area lying between the Orinoco and the Amazon. Tropical real estate is bound to rise in the future on account of recent scientific discoveries and no country can afford to be without it. In a recent discussion of the problem of British Guiana at the Royal Society, Professor L. Knowles said: "I have little doubt that the nation which controls the tropics will in the twentieth century control the most important raw materials and the growing markets of the world." France and England might well let us have this small fraction of the 2,300,000 square miles that they gained in the war which we aided them to win.

MOSAIC DISEASE VIRUS CAGED IN A TEST TUBE

The virus of the destructive mosaic disease of plants, one of the most elusiv of the ultramicroscopic germs now being sought by bacteriologists, has been successfully cultivated in a test tube. The feat was performed by Dr. Peter K. Olitsky, of the Rockefeller Institute for Medical Research.

Dr. Olitsky drew off some of the juice of diseased tomato plants with a ste lized instrument, and "planted" it in an extract made from healthy plants. After a week or ten days, the extract showed a slight haziness, indicating that growth of some sort had taken place. Small smounts of the extract taken from the tube and transferred to healthy tomato vines caused an appearance of the disease.

Bacteriologists have expressed considerable interest in Dr. Olitsky's experiments. The conquest of most of the diseases so far brought under control, it is pointed out, has been preceded by similar isolations of the causal organism or viru and by cultivation in glass under laboratory conditions.

EACH AMERICAN SUPPORTS ONE RAT

Every householder in the United States supports, on the average, one rat for every member of his family, according to the figures of Prof. Henry H. Donaldson, of the Wistar Institute, who estimates the rat population of this country at 120,000,000 or approximately equal to the human population.

The common rat is not native to the United States, but is an immigrant who arrived about 150 years ago. While the estimate as given shows a large increase from the few original settlers in some colonial barn or warehouse, Prof. Donaldson shows that it is nothing to what might happen under ideal circumstances. A worker in his laboratory, starting with a single pair of albino rats, raised 3800 in sixteen months.

Prof. G. G. Chambers, of the University of Pennsylvania, has calculated an imaginary rat-breeding experiment. Starting with a single pair, and assuming that all the offspring would survive and breed, at the usual rate of one litter in four months with an average of six young to a litter, Prof. Chambers' figures indicate that at the end of ten years the offspring of this one pair would number 2,300,000,000,000,000,000, or two and three-tenths quintillions. Fortunately for the rest of the world, conditions of food, enemies, diseases and other hardships of existence prevent the practical realization of such a rate of increase.

LESS DANGER FROM TORNADOES THAN FROM FIRE OR LIGHTNING

The likelihood of a single house or barn being damaged by a tornado is less than its chance of being destroyed by fire or lightning, even in the districts where tornadoes are most frequent. Official statistics show such a risk, Dr. W.J. Humphreys, professor of physics at the U. S. Weather Bureau, said in commenting on the severe tornado which resulted in hundreds of fatalities in southern Illinois and Indiana on March 18.

Two representatives of the Weather Bureau went to the stricken region to carefully study the effects. Their report may reveal important information concerning the cause of these severe storms.

Usually, a tornado does not damage an area larger than a quarter of a mile in width and thirty miles long, so that great havoc is done only when this swath strikes some populous district. This was the case with the one of March 18, which passed over a number of large towns. The average number of tornadoes per year in Illinois is about five, while in Kansas, where they are most frequent, it is about six and a half. In other states in the Mississippi Valley they occur less frequently. They never occur in, or west of, the Rocky Mountains, but at rare intervals they have been recorded as far east as Virginia; and several years ago a mild one occurred within a few miles of Washington.

A tornado consists of a whirling mass of air which can even lift from the earth large objedts coming within its grasp. Just what causes it, or why they occur in the Mississippi Valley and only on very rare occasions in other parts of the world is not known, but in the opinion of Dr. Humphreys, the Rocky Mountains are partially responsible. Their trend is slightly west of north, so that they tend to deflect cold winds from Canada towards the Gulf of Mexico. Opposed to them are the trade winds from the Gulf, which, unlike the Canadian winds, are warm and humid. Dr. Humphreys believes that the oppostion of these two sets of winds gives rise to the conditions which cause a tornado. He stated further that the Weather Bureau is able to predict in a general way the occurrence of a tornado, but that they cannot predict the precise territory that will be affected. Therefore, in order to prevent the people in affected regions from becoming unduly alarmed, the Bureau has made it a policy not to issue tornado warnings.

In a single day's journey in Columbia one may encounter the four seasons of the year and native plants peculiar to the tropical, intertropical, and temperate zones.

MONGOLOID IDIOTS ARE INCREASING

There are about 20,000 Mongoloid idiots in the United States, and these defectives that look like Oriental dolls are increasing, according to Dr. Noble Pi Barnes of Washington, D. C. The condition, which is attributed to defective glands, is more prevalent in France, due, it is thought, to endocrine exhaustion of the race.

"These cases may occur in our best families," says Dr. Barnes. "Education, culture, and refinement do not insure stability of the endocrine system, but tend rather to exhaust these vital forces."

The Mongoloid child has a small, flat nose, and the face has the appearance of having been "pushed in". Its hair is straight, thin, and usually dark. Arms and legs are short, and when the child learns to walk alone, at the age of four or five years, the characteristic gait is shuffling. The Mongoloid is a good natured idiot, whose smiling face suggests " the possession of a secret source of joy."

An outstanding defect in the Mongoloids studied by Dr. Barnes is a disorderly thymus gland. A large amount of phosphorus is needed by the body during early years of life, and according to a current theory the thymus has the important function of supplying this excess of phosphorus. When its work is completed, the thymus is retired, so to speak. The reason for the Chinese features of the white Mongoloid idiot has been ascribed to the fact that oriental diet is low in phosphorus. It is suggested that a long period of dietetic errors in the ancestry of the child is the cause ofgland disturbance resulting in Mongolism, Dr. Barnes says.

"The Mongoloid has a defective protective organism and is easy prey to bacterial infections," he explains. "Such persons rarely live to be 20 years old, and the majority die before their cases are ever diagnosed."

Doses of thymus and other selected glands are being given to such children with encouraging results, he reports. One Mongoloid studied and treated from infancy succeeded in completing a high school course, in spite of congenital disease and other handicaps, but this patient succumbed to illness a few years later."

HONEY BEES PESTERED BY "COOTIES" FROM EUROPE

Presence of the bee-louse in this country has attracted the attention of the U. S. Bureau of Entomology. The bureau reports the need of scientific study of these microscopic stowaways which sometimes slip into the United States on the bodies of queen bees arriving from Europe.

The "cooties" which make life miserable for queen bees, and to a less extent for workers in the hive, are less than six-one-hundredths of an inch long, according to Dr. E. F. Phillips, government specialist on bees. They are hairy little monsters with flattened heads and no wings. Each leg is equipped with a set of about 30 teeth, like modified claws, and by means of these claws the bee-louse clings to the hairs of the flying honeybee and travels through the air in safety.

Dr. Phillips says that the pests have not been studied extensively, and that scientific opinions regarding them differ. It is fairly well settled that the bee-louse was misnamed, as it apparently is not a bloodthirsty parasite, but rather a "guest" insect.

Perez, French scientist who observed infested bees, reported: "When the louse wishes to feed, it goes to the bee's mouth, where the motions of its feet, armed with bent claws, produce a tickling sensation, perhaps disagreeable to its host, but at least provoking some movement of the buccal organs, which slightly open and release a small drop of honey which the louse at once licks up."

Dr. Phillips does not anticipate that this pest will greatly harm American apiaries, but he says that its establishment in this country is unfortunate and that its importance should not be underestimated.

"With such a visitant of the bee colony," he adds, "it is impossible to determine in advance what effect it may have in some other portion of the country, and every means should be taken to eradicate it, especially since the infested area seems to be small at present.

ANTS TALK BY SIGN LANGUAGE

What ants say to one another and how they communicate has been studied by Professor von H. Eidmann of Munich.

Less is known about the social customs of many an obscrure race of people than is known about the social customs of ants, but the mode of communication of these little creatures has been found difficult to study. Beyond the fact that the ant language is apparently a deaf and dumb language of signs, little else has been known.

Professor Eidmann made his observations on a colony of ants inhabiting an artificial ant hill in his laboratory, and he chose the incidents of food finding for his study of their mode of communication. An ant upon finding a particle of food, tried to drag it away all by herself but if that was found entirely impossible, she took the shortest cut back to the ant hill to get help.

In the upper part of the ant hill was a sort of guard room where there were ants always ready for such hurry calls. The scout who had found the food entered and crossed antennae with each ant and thus communicated the glad tidings. The ants swarmed out of the ant hill and ran around aimlessly until the scout who had found the booty reappeared. She had been marked by the experimenter by a white speck on her back, so that her movements could always be followed.

The scout led the way with a trail of ants close on here heels, the antennae of one often touching the ant ahead, and all of them following every motion of the leader and executing a perfect goose step. When the booty was found, it was attacked and broken to pieces or dragged back whole to the hill.

The scout apparently did not tell everything she knew, for when the experiment was repeated and the leader apprehended just as she was about to direct the way to the find and her trail destroyed by putting paper on her track, the others lost their way. Whether she could have given more information had she known what would happen to her is not known.

Professor Eidmann's ants exhibited a number of admirable qualities. First of all, they never ask help of their fellows when they can do the job by themselves The experimenter sprinkled crumbs of food where a scout could find them. The little creature made in all twenty-three trips back and forth to the ant hill until the last crumb had been delivered.

Another interesting quality is their strong sense of duty. When the good news of the discovery of food has once been communicated and the little troop is on its way, nothing can lead them astray. A drop of honey placed temptingly in their path lost all its charm. A sidelong lick and an askance glance was all it got. This good principle, however, was carried to an absured extreme. Bigger pieces of better food were passed up because the ants did not know how to change their minds.

This trait explained something that had puzzled the experimenter for a long time. He had often noticed in nature, that entire swarms of ants passed over without touching, particles of food such as they generally devour greedily. This he now explains as being not within the line of duty.

Ants may seem to have short memories, but in Prof. Eidmann's experiments, repeatedly, after the last trace of food had been carried off, the ants returned to look for more. This, however, can be explained biologically, for often where the head of a delectable insect is found the body may be somewhere about. We ourselves are liable to search carefully a spot where lost money has been found.

GERMAN OVERPOPULATION DECLARED CAUSE OF WORLD WAR

Overpopulation in Germany and the resulting desire of German statesmen to find outlets for their people in more thinly populated France, was the cause of the World War, members of the Sixth International Neo-Malthusian and Birth Control Conference in New York were told by Dr. Ferdinand Goldstein, Berlin sociologist. Even today these conditions are being duplicated in other countries, particularly Japan and Italy, he warned, and seem likely to lead to a new world conflict.

"Japan is an agricultrual land," he said, "nearly eighty per cent. of her population living in the country. In consequence of this she should have as thin a population as the United States, but it is of enormous density, about 146 per square kilometer, compared with 14 for the United States. Asthe land is by no means able to give work to the whole population, it needs outlets, and as it can not get them in a peaceful way, it will take them by war." Eugenic measures, which would prevent increase of population beyond the point where all may be cared for, were advocated as the only way of preventing such a disaster.

Strawberries grow "whiskers" in the final stage of the black mold disease with which they are frequently infected through bruises received in careless handling.

Special paint which will not reflect light is being used on night-flying postal airplanes to protect pilots from the glare of searchlights fixed to the wings.

RACE SUICIDE METHODS PREVENT COTTONWOOD "SNOW"

In anticipation of the nuisance of showers of fluffy "cotton" from the cottonwoods used in many places for shade trees, Dr. W. H. Long, of the U. S. Bureau of Plant Industry, in a statement to the American Forestry Association describes a method for killing the blossoms with a sulfuric acid spray, and thereby preventing the development of the downy seeds later on.

The spray consists merely of a two per cent. sulfuric acid solution -- one gallon of concentrated acid to forty-nine of water, applied with the usual type of tree-spraying apparatus. Because of its corrosive nature, the liquid should be handled only with copper or brass pumps and other apparatus.

Since the "cotton" is produced only by the female, or seed-bearing trees, these alone need to be sprayed. The trees that produce the large, conspicuous catkins, or "red necktie", are staminate or male, and never bear cotton. The pistillate or female catkins are produced on separate trees at the same time as the more conspicuous male clusters, and are much smaller, greenish clusters, protruding very little from the opened buds. These are the ones that need spraying.

Treatment of an average-sized shade tree requires from seven and one-half to ten minutes of spraying, and consumes about ten or fifteen gallons of the solution. The cost per tree varies, ranging from twenty to thirty cents.

DEPARTMENT OF AGRICULTURE TESTS ANTI-RABIES SERUM

Tests of the Japanese vaccine for protection against rabies carried on by Dr. H. W. Schoening of the U. S. Department of Agriculture indicate that the serum is a valuable protection, but that its degree of success seems to depend on the strain of infective virus against which it is compelled to work.

Apparently, the invisible, ultramicroscopic organism that causes madness in dogs exists in varieties as distinct as those found in larger plants and animals for tests made upon vaccinated dogs with virus from different sources gave varying results. In one test, five out of six vaccinated dogs inoculated with rabies died of the disease; in another three out of ten, while in a third experiment none of the dogs contracted the malady. Unvaccinated animals, inoculated with the disease at the same time, as "controls" or checks, suffered more severely than those previously treated with the protective serum. One of the experiments showed a larger fatality among the vaccinated than among the unvaccinated dogs, but this was due apparently to a spoiled lot of vaccine.

Dr. Schoening states that the method has already been widely used in Japan, and that among over 30,000 dogs vaccinated only one death has been reported.

Nearly two hundred suggested methods of controlling the cotton boll weevil have been tested by the U. S. Department of Agricutlrue during the past year.

Blue Gum trees, now one of the most conspicuous features of the landscape in California, were first introduced into that state about 1860.

ENCOURAGEMENT OF COLLEGE RESEARCH PLANNED

Methods of encouraging scientific research in colleges and inspiring a larger proportion of college students to make the increasing of knowledge their life work were considered at the conference held at Washington by the National Research Council and attanded by delegates from twenty-three colleges and twelve educational institutions.

"There are more than fifty societies, organizations and foundations in this country, not counting universities, technical schools, and experiment stations, which have as their whole or partial purpose the encouragement of research," said Dr. Maynard M. Metcalf, chairman of the division of biology and agriculture, National Research Council, in explaining the object of the meeting. "Yet, with all these, very little is done to encourage the college teacher in his studies. It is the university men who get the aid, the college faculty members being, for the most part, so burdened with long hours of teaching that little advanced study and productive scholarship is possible. We must consider how encouragement may be given to college teachers in their own advanced studies, not so much because of the actual results of such research but because of the inspiration that will be given to their students."

The colleges and universities represented, by administrative officers or professors or both, were: Amherst, Bowdoin, Brown, Buffalo, Carleton, Chicago, Drake, Goucher, Hamilton, Howard, Lafayette, Mt. Holyoke, Oberlin, Pennsylvania, Pomona, Reed, Smith, Swarthmore, Union, Vassar, Wellesley, Connecticut Wesleyan. A dozen educational foundations also are represented.

The conference was arranged by Prof. Anne Young of Mount Holyoke College and among the speakers were President G. R. Olds of Amherst, Chancellor S. P. Cappen of Buffalo, Dean Edward Ellery of Union College, Prof. John A. Miller of Swarthmore, Prof. E. C. McClung of Pennsylvania, President Frank Aydelotte of Swarthmore, Dr. Edwin E. Slosson of Science Service, Dr. L. Hektoen of the National Research Council, and Prof. Harry N. Holmes of Oberlin.

SEED-INFESTING WORM STEALS AIR RIDES

The dandelion, that universal springtime pest, is itself pestered. It is subjected to a widespread infection by a threadworm, or nema, which makes a large percentage of its plants unhealthy. Fortunately so, for if it had no disease at all it would be an even greater nuisance than it is.

How the infesting threadworm has come to be so widely distributed has just been explained by George H. Godfrey, plant pathologist of the U. S. Department of Agriculture. He finds that the worms, which are exceedingly small, burrow into all parts of the plant, and that some of them find their way up into the seedhead and encase themselves inside of the seed coat without injuring the seed. Then when the seed drifts away on its little parachute the threadworm goes right along, and when the seed falls and germinates the worm is "in on the ground floor".

About 8,000,000 acres of forest land in the United States are every year swept by man-caused forest fires.

BRITISH MAKE PROGRESS WITH STAIN-RESISTING SILVER

A new kind of tarnish resisting silver has been developed by a British silver manufacturing company. The material, which is 92½ per cent. silver alloy, has been put to practical test by the manufacture of articles from it, and the results have been reported to the Silver Trade Technical Society.

The new alloy is said to stand up to the heat necessary for soldering, and to keep shape while being heated. It will bear more heat than standard silver, and will allow of a considerable amount of manipulation without developing any defect.

British housewives are following the experiments with interest in the hope that egg and fruit stained silverware will soon be problems of the past.

American scientists are also experimenting with tarnish-resisting silver, according to Dr. H. W. Gillett, metallurgist of the U. S. Bureau of Standards. The Bureau of Mines and the Bureau of Standards are working on the problem, but no announcement of results will be made for several months, probably not before early autumn, Dr. Gillett states.

DARWINISM DEFENDED BY PRINCETON ZOOLOGIST

Darwinism is more firmly entrenched in scientific thought than ever before, even though discoveries made in recent years have compelled scientists to lay more emphasis on some of the factors which Darwin believed to be of minor importance. This was the opinion given a University of Pennsylvania gathering by Dr. Edwin Grant Conklin, professor of zoology at Princeton.

Professor Conklin especially criticized writers, such as George Bernard Shaw, who stated in a recent book that "if it could be proved that the whole universe had been produced by natural selection, only fools and rascals could bear to live,"

"All assertions that natural selection is antagonistic to ethics are due to failure to recognize that there are different paths leading to different goals in human evolution, and that standards of fitness differ in physical, intellectual and social evolution," said Dr. Conklin.

Many of the modern criticisms of Darwin's work by scientists had been met and answered in Darwin's own writings, he declared , and he pointed out that Darwin himself recognized that natural seledtion, or survival of the fittest, is but one of the causes of evolution.

"Darwinism is not dead, abandoned or discredited, as some would have us believe, natural selection is accepted as one of the factors of evolution by practically everybody," he said. "Thus we return to the position of Darwin himself, and always the fundamental idea in his theory is more secure. To think that all causes of evolution have been discovered is incredible. It is still a field of research and may always remain so."

Two hundred five thousand children are now in institutions or cared for by agencies in the United States.

SERIOUS EPIDEMIC OF FLU UNLIKELY

Although Chicago reports that the number of deaths from pneumonia and influenza there is almost double the usual rate at this season, no epidemic of flu is predicted by health officials. The Public Health Service says that it is rather late for an epidemic of flu or grip to gain headway now. Abrupt changes in temperature, which chill the body and result in colds and lowered resistance will soon be over.

RECORD BREAKING STORM DELAYS SOLAR OBSERVATIONS

American scientists who observe the sun from the most cloudless region of Chile have been considerably delayed in their work by what is regarded as the worst storm in that region in 25 years, according to Dr. C. G. Abbot, director of the U. S. Astrophysical Observatory.

Continuous rainfall for over a month made solar observations impossible, L. B. Aldrich, in charge of the observing station, has informed Dr. Abbot. The River Loa became a raging torrent, and the excessive rainfall caused great damage to bridges and property.

WE'LL ALL BE HUNGRY IN THREE CENTURIES

Three hundred years more, and the world's cupboard will be bare. Prof. Edward Penck, speaking before the Prussian Academy of Sciences, made this doleful prognostication, arrived at as the result of his statistical studies. Counting the present area fit for cultivation, which is limited, food can be supplied under the best possible management for eight or nine billions of people. At the present rate of increase, this number will be reached in 300 years.

Prof. Penck added a hopeful qualification, however, in the conjecture that long before that time shall have elapsed, the situation will be relieved, partly by the reclamation of deserts and swamps and partly by the discovery of methods of manufacturing synthetic foods.

TABLOID BOOK REVIEW

EMINENT AMERICAN CHEMISTS:- A Portfolio of Portraits of the Most Distinguished Americans in the Field of Chemistry from the Earliest Daysof Republic to the Present, Together with Short Sketches of the Work of Each. Compiled and Edited by D. H. Killeffer, Associate Editor of Industrial and Engineering Chemistry. Published privately by the author. New York City. $6.00.

This collection is bound in loose-leaf style and the portraits are reproduced by a photographic process. For this reason they are suitable for framing in lecture room and laboratory.
