

The Golden Age

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Building Roads to Stay

THE best five years in railroad building in the United States were 1879 to 1883, when 40,000 miles of railway were constructed for \$20,000 a mile, or a total of \$800,000,000.

In the current five years from 1920 to 1924 the highways which are planned amount to 100,000 miles, at \$30,000 a mile, totaling three billion dollars. The road-building program, as an engineering and contracting achievement, is nearly four times as great as the memorable period of railway building.

Thousands of Miles Being Built

AT THE present time some 22,000 miles of highway are either under construction or have been completed. The work is conducted under the federal plan of combined national and state coöperation, and has cost over \$360,000,000. Great as is this achievement, it is only a fraction of the giant project to care for the needs of seven million motor vehicles and over 20,000,000 horses and 5,000,000 mules, to say nothing of miscellaneous agencies of highway transportation.

Under the federal-state plan, the road projects are first planned by the states. No federal aid, however, is granted until the situation has been gone over thoroughly by a federal highway engineer and approved by him.

The federal engineer makes these demands: There has to be a good bottom in the shape of a good earth road, with proper bridges, culverts, embankments and as few railroad crossings as possible. After the approval, the earth-road bed may be in use some time before it becomes possible to get the surfacing materials and the modern road-building equipment on the spot, but the project once approved, it is only a question of time before the finishing touches will be made through federal assistance.

Magnitude of Need for Roads

THE roads built or worked on total nearly ten times the distance from New York to San Francisco.

How small a task this is compared with the total ultimate needs of the country appears when it is seen that these roads are long enough to provide a good highway east and west across the country about every hundred miles apart between Canada and the Gulf of Mexico. The country cannot be said to have a complete road system until there is a good east-and-west road at least every five miles, totaling a distance fully twenty times as much as the recent new roads. To this should be added north-and-south roads every five miles, making an addition of half a million more miles of first-class highways. This would ultimately place every person in the United States within two miles or so of a modern road. Even then it would be a question whether more good roads would not be needed, until every home was located on the kind of road best calculated to provide a thoroughly efficient and money-saving system for transportation by truck or automobile from the farm to the market.

The United States is not an old country, having had a national existence of about a century and a half. In that time the population has increased from 4 million to 105 million, or 2,500 percent. Increase of population is going on at the rate of a little over one percent a year. This rate in a century doubles the population, making the probable population a century hence 210 million, two centuries 420 million, centuries 840 million, and so on. Roads have to be provided.

The area of the country is such that for every person there are nearly twenty acres of land, or a hundred acres per family of five. If

over three centuries there should be the limit of population, or about a billion people in the territory of the United States, who will have an average of about two acres per person, or ten per family. Doubtless, with the many Burbanks and Dieners in the meantime increasing the yield of vegetables and fruits, it will be easy for a family to subsist on ten acres.

What the needs of this host will be in highways can only be imagined, but the rule will be better roads and more permanent ones than are seen now. If road building is to keep up with population increase, the beginning made now is none too soon or too much to provide the hundred million of today and the myriads of tomorrow with adequate transportation facilities.

Roads for Automobiles

THE future of roads will run parallel with the development of the automobile. Now there is one automobile to thirteen persons, or one to three families.

When the future is considered it is necessary to speak in terms of the Golden Age; for calculations of things coming run quickly into that period. When the entire produce of labor is enjoyed by the people that produce things by direct or indirect labor, and none is given away for interest and rent or for war taxes, the average prosperity will be much increased. It is not difficult to see, at a comparatively early date, the time when every family will have its own car. With seven million cars today the good roads are badly congested, and a pleasure drive in the touring season is a procession. The tripling of the number of cars would be the opposite of a blessing, without a tripling of the mileage of the highways. Indeed, the mileage of good roads should be six times what it is, if car owners are to travel with comfort and freedom of movement. An immense increase in the road system is imminent within the next quarter or half century, to take care of the traffic needs of the people. As far as cost is concerned it

will not be felt when the enhanced per-capita prosperity of the Golden Age is taken into consideration.

and more the roads are being given to the automobile, and need to be built to meet the needs of this modern of transportation.

The importance of motor transportation is seen when its cost is known.

The investment in automobiles is six billion dollars. There are 7,904,271 automobiles, making the average present worth \$760 per car.

To operate these cars in 1920 cost \$6,019,822,966, or \$762 per car or truck. The investment is a third of that in the steam railways, and is about the same as that in the electric railways of the country. So much of the investment in automobiles represents personal and family travel, and is of so high educational, social and civilizing value, that the creation and maintenance of adequate highways appear in their true aspect as second to none in social importance for the welfare of the people.

Good-Roads Organizations

TO PROMOTE the building of highways there are good-roads organizations, local, city, state and national. At the head of them all is the International Road Congress, which maintains an organization and holds annual meetings where papers are read and discussed and the advanced methods of any part of the world are made known through the engineering press to road builders everywhere. This makes it easy for men interested in road construction and maintenance to keep well abreast of the times.

Among the nations participating in the Congress are Belgium, Cuba, France, Great Britain, Italy, Japan, Mexico, Norway, Portugal, Spain, Sweden and Switzerland. Up to a recent time the United States had not joined the organization, and was not represented officially, though highway engineers from this country attended the sessions.

Membership in the Congress follows this rule: For each 1,000 francs--\$76.30-- paid by a government into the fund for maintaining the organization, that government is entitled to a representative, the number not to exceed fifteen. For the sum of \$1,144.50 the United States could have full representation—the price of a couple of shots by one of the main guns of a battleship. One big gun would pay for this road service fifty to a hundred times over. Which is worth the more to the common people?

Great were the expectations of the people when the gigantic national-road project was adopted, and Congress agreed to spend money by the billion. In states which had no highway

organization, had done no preliminary work and had scarcely a mile of modern highway, the people expected the officials to create the organization overnight, and with a wave of the engineering wand to build roads costing billions. In the better equipped states several times the possible output of roads was looked for in a shorter time.

The many hindrances appeared. At the top of the federal road system, when it came to the fixing of the salaries of the men to have charge, Congress took steps that bade fair to insure failure. The states pay their highway commissioners as follows:

- 20 states pay \$3,000 or less
- 32 states pay under \$5,000
- 8 states pay \$5,000
- 2 states pay \$6,000
- 2 states pay \$7,000
- 1 state pays \$8,000
- 2 states pay \$10,000
- 1 state pays \$20,000

Congress was finally induced to pay the federal road commissioners \$6,000 each. Certain Congressmen said that they would never stand for such big salaries. These men have to handle some \$200,000,000 or more. What would private enterprise pay for the efficiency that could best handle such enormous expenditures?

The public has been willing to act through their legislative bodies. Stupendous sums have been appropriated for good roads, and great promises have been found impossible of fulfillment. A psychological obstacle might appear at any moment and quickly spread: for the public might easily change from their generous spirit to one of reaction, and the program for proper highway transportation be blocked for an indefinite period. It is much harder to resurrect zeal than to inspire it the first time.

Forty-Four Thousand Dollars a Mile

THE people are restive under unprecedented taxation, and do not relish the paying up. Much of the financing of the roads has been through the sale of state-road bonds. Trouble was experienced in getting in the money for the bonds. Bids for the road contracts ran around \$44,000 a mile, the price of a good railroad,

and bidders for the bonds offered 95 percent to begin with, which they afterward reduced to 93. This meant an additional \$2,500 to \$4,000 a mile by the time the bonds were paid up by the state.

Another difficulty was in the impermanence of the roads. No bond is considered very good, no matter who is back of it, if the security or assets back of the bond wear out much before the bond is liquidated. A good road may not last more than five to ten years, without substantial additional investment for replacement, while the bonds are often payable in ten, fifteen or even twenty years. Investors dislike bonds on dead horses, and they are showing an increasing wariness about road bonds.

The financiers did not fancy the money going out of their hands and into government-owned highways. Before the Federal-Reserve hard times hit the country, there were financial magnates—interested in private railroads chiefly—who advocated the stoppage of all highway construction because of "the shortage of labor". They did not mention the growing shortage of railway freights as the people become more independent of the Wall Street railroads by following the advice to "ship by truck". So eminent a railroad man as Daniel Willard, who was chief executive of the railroads during much of the war, did not seem to know that governmental arrangements had been made and hundreds of millions of dollars were already being expended on a system of transportation of equal importance with the railroads. In Texas, where the farmers were entirely dependent on the railroads, a considerable proportion of the 1920 grain crop rotted on the ground for lack of railroad cars. In Kansas, where there are good roads, three million bushels were hauled to market by motor trucks. Of course the new highways took some men from the farms, but so did the railroads, the steel industry, the copper business, and so on; yet no financier suggested shutting down the steel mills in order to get the workers back on the farms. Since then the men of the Street is called "Wall" have shut down a great many industries to make working men will back to farms or anywhere else, including out of our hands". The end of it in American industrial history is not. Although recent road-building has

acterized by large contracting organizations and the use of labor-saving machinery, making for a very high mileage of finished road, the production of completed highway in 1920 was only 46 percent of the amount contracted for, which totaled over \$300,000,000 for the year, with two-thirds of a billion dollars' worth more waiting for the contractors.

Several factors have made for a limited output of finished roads. It was found difficult to expend the appropriations because to start early enough in the season was not always feasible, and there was a chronic shortage of materials, besides the aversion of labor for road work. The best results in 1920 came in connection with large-mileage contracts, because of the efficient equipment possible: but the requisite plants were slow in being assembled from manufacturers overburdened with orders.

Woes of the Contractors

MANY contractors who were efficient in other lines of engineering, but who were inexperienced in highway construction, lost time in experimenting with new methods. An acute shortage of sand, gravel and broken stone was responsible for much unfinished work. Lack of railroad cars, and for a time the ranking of road-material shipments in preference on the railroads, the crowding of producers of materials in certain localities, and the congested grouping of road-building operations too closely on certain lines, each contributed its share toward delay in turning out the nation's roads. Men dislike the work; and the workmen obtainable for highway labor are of an unstable class, with frequent changes in personnel and general inefficiency in their methods.

The necessities for successful highway construction and maintenance are stated by A. R. Hirst, of the American Association of State Highway Officials, to be eighteen in number:

1. Trained engineering help.
2. Materials of construction.
3. Cement in the right quantity in the right

quate car service by the railroads.
 4. Efficient construction organization at fair

5. Adequate labor supply.
 6. Well-located and aligned.
 7. Good records.

8. Proper local and national publicity.
9. Care of traffic during construction.
10. Good touring maps for the public.
11. Effective marking of the roads.
12. Traveling accommodations such as garages, hotels, parking places and comfort stations.
13. Labor-saving equipment.
14. Proper layout and equipment for varying conditions.
15. Improved grade-crossing arrangements.
16. Road schools and short courses for local supervisors and repairers of roads.
17. Adequate highway legislation.

Another hindrance is the fact that, with a scarcity of contractors and an over-supply of road projects, it becomes difficult for some counties to secure bids at all for their roads. In not a few instances the indifference of contractors was plainly due to improper presentation of the facts about the proposed road, in a manner to give the contractors a clear idea of the work to be done. In Rockwall County, Texas, County Engineer Julian Montgomery obviated this difficulty and obtained seven bids for the county's road work. This was by elasticity in certain requirements in the material line, and by painstaking scale maps illustrating every possible feature of the project, so that the contractors were able at a glance to visualize the road as well as or better than by going over the ground. County engineers as a class have shown much incompetence in the presentation of their propositions. But what can anyone expect of a political engineer?

In connection with the life of a modern road, according to the *Engineering-News-Record*, the outside limit of the actual life of the best concrete roads is ten years under very heavy traffic, and fifteen to twenty years under the lighter traffic. When concrete roads go, they do so all at once, with extensive and deep holes, apparently due to a disintegration of the surface, attributed by the highway engineers to fatigue of materials. The disintegration appears not merely at the surface, but simultaneously throughout the entire depth of the road. Such roads can be saved for a while by resurfacing with hot mixed bituminous pavement, but as concrete roads they are gone. This and like facts have an important bearing on the growing indisposition of investors to buy road bonds.

Roads Smashed to Pieces

IN New York State it took but a single cold season to destroy some of the best highways of a state famed for its roads. The roads had been somewhat worn, but the winter and spring traffic by overloaded trucks smashed through tops and foundations on entire sections in the vicinity of New York City, from which radiate scores of truck lines. The estimated cost of the repairs was \$15,000,000, but a parsimonious state legislature made only half that amount available for the purpose. Meanwhile the trucks kept pounding what was left to pieces. The destruction of the highways is an important part of the community expense of shipping by truck.

Damage to roads from heavy traffic has resulted in much road building being done with steel reinforcement imbedded in the material of the road. Steel-reinforced roads stand up well under traffic which batters and destroys ordinary roads of any other type. The additional cost of the reinforcement is a small item in comparison with the complete rebuilding of roads smashed to pieces under the ever-increasing weight and impact of swiftly moving truck-traffic.

Much of the deterioration of the roads comes in the spring when traffic, which at other seasons is easily borne by the roads, becomes too heavy, and breaks the roads to pieces. Engineers and road officials consider it desirable for the preservation of the investment in the highways, to have legislation to enable state highway departments to keep too-heavy vehicles off the highways during the period when the frost is coming out of the ground. Only so, they claim, can be avoided the destruction of a substantial part of the best highways of the country.

In Connecticut the experiment has been made of strengthening the road structure by laying steel channel tracks for heavy trucks to run in, two such tracks being provided for traffic in opposite directions. The use of such tracks is expected to enable trucks to travel with a speed and safety unattainable on ordinary roads of even the best type. The steel channels are made with a corrugated surface, which gives the wheels a good grip and prevents the ever-present danger of skidding in passing curves. The weight of the heaviest traffic is taken off the road proper, which is preserved for a much longer period for the use of the lighter trucks

and pleasure cars. A simple trait of human nature eliminates the "road hog"; for he must keep to his track or lose the benefit of the best part of the road for his purposes.

Another kind of durable road is being built in the Rocky Mountains. Not every locality has the backing of the federal government in building roads to last like the ancient Roman roads, but the state of Colorado is coöperating with the national government in building a highway of solid granite at a cost of \$25,000 a mile. Rome had durable roads, but no motor trucks. If the cement trust can furnish as good a binder as the Romans made use of, there is no reason why this stretch of road should not be in use five hundred years hence, provided the route is such as will commend itself to the standards of grade and efficiency that will prevail in the Golden Age.

Pennsylvania has a unique stretch of road between Scranton and the New York state border. When the Lackawanna Railroad built its \$12,000,000 cut-off, it had ten or twenty miles of double-track roadbed through a mountainous section, which it sold to the state for a song. On this grade a concrete road has been built, and the tourist enjoys the novelty of riding through a rough territory on a modern highway of the evenness of ascent or descent of a first-class railway. It is more than possible that in the Golden Age the highways generally will be relocated and planned to grade like a railroad, making possible the utmost efficiency of transportation ever known on highways.

A class of roads which was highly developed in Europe prior to the World War, but is receiving less attention, and has never had much attention in the United States, is the military or strategic road. War is still a possibility for almost any country—otherwise armies might be disbanded; and the efficient conduct of war in the age of the motor vehicle depends not a little on a system of roads adapted to the uses of war. Roads paralleling the boundary of a country at intervals of a few miles, and connected by frequent cross-roads, constitute lines of transportation behind trenches or artillery, and make it possible for defensive armies to advance or retreat, and always be provided with arteries for the transportation of supplies and munitions of war. Governments usually plan such roads and construct them in the most modern way, re-

ardless of any economic value, and consider the expense well worth while, because of the sense of security they afford against invasion.

In China the cost of good roads together with the difficulty of creating a modern road system has encountered an unexpected hindrance. The Chinese are sincere believers in a multitude of devils of superhuman wisdom who, however, may be readily fooled and run off the roads, if proper precautions are taken. The Chinese highways are built in a zigzag fashion. The devil who might take it into his mind to interfere with a Chinaman's welfare in the desperate chance of an oriental journey, runs off the road at every sharp turn, and the man goes on his way rejoicing until the fiend again finds the scent. Some 400,000,000 Chinamen testify, by the universality of zigzag roads, that the scheme works; but to the foreigner of modern spirit, and to the educated Chinaman, the zigzags seem adapted also to getting trucks and automobiles off the road. We think that Chinamen are funny people. But Americans still build steeples to their churches.

Earth Roads

OF COURSE, for a long time the bulk of the roads will remain of earth, clay and sand. Highway construction is not to be lessened, but rather increased, but nevertheless there are about ten miles of earth roads to one of the modern type.

The intelligent and efficient construction and maintenance of such roads is of paramount importance. The earth road is still the nation's road.

Good practice has demonstrated that earth roads should not have a level surface like modern roads, but should be well crowned, suitably to the materials at hand, in order to rid themselves readily of that foe of highways — water.

Earth roads need scientific attention. Trouble-points, where traffic gets stuck, amount to a small fraction of the mileage, but especial attention needs to be given to them, in order to keep the roads as a whole in such shape that traffic can be kept moving. One mudhole can destroy the efficiency of two miles of otherwise good road.

Surface modifiers are essential—clay or clay gravel for sand roads, and sand or sandy gravel for clay roads. Earth roads are kept in the best

shape by maintaining a road patrol composed of a man and a team or motor truck on each section of the road, to devote the entire time to seeing that the road does not fail at any point. The equipment should never be the well-known split log, which merely accentuates defects, but should comprise a blade grader or a road planer. It is a slow process, at best, modifying the cross-section of a road; but perseverance on the part of a patrol in time works wonders.

England is an example of a country where the roads have gotten into bad shape. During the war the roads had but little maintenance; and experience teaches that unless untried methods are employed for speedy repair it means the early destruction of the road system and the rebuilding of a new one—a too heavy burden for a war-torn country.

The main arteries of important and heavy traffic were repaired in substantial form; but suburban roads carrying light traffic usually had good foundations left, and for immediate purposes required only the restoration of the surface. In addition to the usual roughing down of the surface and its temporary resurfacing, when the tarred-macadam mixture was applied for the new surface, clinker ash, boiler ash and old building material were employed. Good results were obtained from the covering of a concrete foundation, which had been leveled along the surface, built up at the crown, and scarified to hold the surface material, with one to one and a half inches of tarred material. Among the miscellaneous materials used were broken bricks; old concrete, gravel, broken pebbles, and other clean, hard substances. In England, as elsewhere, necessity is the mother of invention.

Recent Advances in Road Building

THE principal recent advances in the art of road building have not been in new devices, but in the extension of the use of a few of the older machines and in the development of complete road-building plants. The chief new machine to find extensive use is the power-tamping machine, which tamps the soft concrete mixture with a speed and efficiency unobtainable otherwise.

In the road plants the factory idea was elaborated, large central units were employed, the use of the narrow-gauge railway for carrying

materials from a central material plant to points of use, was developed, and the number of workmen was reduced and their functions systematized. Men gave way to machinery. It was found that much of the machinery on the market was too light for the service required, and that a heavier type of mechanism was necessary.

Labor-Saving Methods

AS AN example of modern efficiency, Walter G. Leininger, superintendent for the Commonwealth Improvement Company, on a concrete-road job in Illinois—according to *Successful Methods*—reduced the labor cost sixty-two percent by releasing all but seventeen of the forty-five men for service on other portions of the concern's work.

It was the old story of the proper application of labor-saving machinery. Originally there was but one machine—a mixer—and a too-large wheelbarrow brigade. A tamping and finishing machine freed five men, the change from wooden to steel forms saved one man, two bucket loaders and two small three-wheeled tractors with dump bodies released twenty men from the unwelcome wheelbarrow task, and two men were saved in between the operations—total twenty-eight.

The seventeen men that were left laid an average of 350 square feet a day, with a record day of 475, or twenty-eight square feet each. The systematic handling of road construction was exemplified in the distribution of the men at work, each having specified duties, as follows:

- 2 men ahead grading.
- 2 men operating two small tractors.
- 2 men operating two bucket loaders.
- 2 men bringing cement to mixer.
- 2 men setting forms.
- 1 man operating mixer.
- 1 foreman.
- 1 man distributing concrete discharged from mixer.
- 1 man operating finishing machine.
- 3 men spreading soil for protective covering on finished road.

17 Total.

Most of the heavier work was taken from human muscles and given to gasoline power to

do—a suggestion of the direction progress will take in the Golden Age, when, however, labor-saving machinery will not throw men into the idle column, but will make less and lighter work for everybody.

Old Methods Out of Vogue

IT IS evident that highway contractors cannot get along with the old-style equipment of a few hoes, spades, shovels and a plow and road scraper. Road construction calls for costly machinery, and the equipment should be obtained for jobs of sufficient magnitude to pay for the plant and leave a profit. According to some authorities small plants pay better than large ones, because capable superintendents are hard to find for the large ones, railway facilities are often inadequate to keep such plants going, and frequent breakdowns in machinery under practical operating conditions hold up an entire project if the plant is too large. The saving in the costs of delay more than makes up for the added hand work of the small plant. There is a limit to the application of the factory method.

In some of the engineering arts the work has been reduced to a science, and the scientific end is recorded in engineering handbooks; but highway engineering still requires much research to bring it up to the level of mechanical or electrical engineering. Highway engineers state that they are interested in the extension of knowledge on such subjects as the relations between cost of truck operation and the amount of measured work done by the truck; the relation between the rate of wear of road surface and the number of wheels passing over it; the relation between maintenance cost and curvature of road; and many like topics, which mean little to the average person, but which to the engineer make the difference between guess work and scientific knowledge.

In the large plants a new labor-saving method of constructing concrete roads consists of the making of the concrete slabs in a central plant in forms of the proper size. The finished slab, half or full width of the road, is hauled by motor truck or trailer to the place where it is to be used, and set exactly in place. The chief difficulty is found to be the preparation of a subgrade of precisely the right level and consistency, so that the pre-cast slabs may match and afford a smooth riding surface after the

seasonal settling has taken place. From the manufacturing viewpoint it is much easier to make the slabs at a gravel or sand bank, than to cart the raw materials, perhaps for miles, especially because the slab plant can be kept going night and day, rain and shine. The first cost may be a little higher, but the greater construction speed may readily make up this cost in the lessening to the community of the time for costly and vehicle-racking detours called for under the ordinary plan.

The shortage of railroad cars which prevailed a year ago has vanished and is replaced by a heavy surplus; but during much of the current road-building movement the railroads were unable to furnish enough cars to carry the road materials, a condition which is liable to recur. It was suggested that large trucks for road-building materials might cure the rail situation. Trials showed that the heavy truck loads destroyed about as much road as they built, and that many of the roads already constructed were not able to support the heavy added traffic.

Economy in Road Finance

ECONOMY in road construction ought to start at the financial end of the work. It has been shown that the usual plan of building with money raised by the sale of bonds, and paying interest on the bonds, costs \$190 for every \$100 of first cost of the road, or nearly double, to say nothing of maintenance and repair. But the Golden Age is coming soon, and then it is safe to say that roads will cost what the estimate calls for; for with the passing of the present age of Big Business, interest on money will be a memory of what will be regarded as an undesirable past.

Money-saving on the road program has been made the business of the state. With contractors bidding one against another, prices naturally rise, and to prevent this some states have provided that the state alone shall buy all the road materials for all the contractors on state-road projects. There being but one buyer, a fair price can be paid on whatever goes into the road. Millions of dollars are to be saved the public in the first cost of their roads.

The person who is most interested in economy in connection with the roads is the taxpayer. Taxe to provide the money with which to build and maintain highways and pay off the bonds

are levied first upon the people who receive the direct benefit from the roads, and second on those receiving indirect benefit. Direct benefits are enjoyed by the owners of automobiles, and they are generally willing at heart to pay a fair price, if good road service is rendered. If they can have better roads they are content—in spite of objections presented—to pay an even higher tax than for the present often unsatisfactory roads. The tax on automobile owners is levied in the form of a license fee. It conforms to the principles of taxation that taxes should be paid (1) according to the benefits received, (2) by the people that have the money, and (3) with their approval. The motorist, however, likes fair play, and objects to such practices as have prevailed in one eastern state where it was commonly reported that out of funds ostensibly applicable for road purposes, an amount was always diverted to other uses equal to the amount paid in on licenses, thus depriving the automobile tax-payer of the benefits from the tax which he paid. Within reasonable limits the automobile owner feels that good roads save him no insignificant sum in repairs, operating costs, and depreciation, and he is not unwilling to pay taxes accordingly.

Economy of Good Roads

THE dollars-and-cents economy of good roads was illustrated in figures compiled by the state engineer of Nebraska. To pull a ton over different types of roads took the following pounds of pulling power:

ROAD	POUNDS	PERCENT EFFICIENCY
Earth road	218	12%
Graveled road	80	34%
Paved road	27	100%

As a result of these figures—this was before the farmers were driven bankrupt by the 1920 Big-Business drive on prices of farm products—the farmers went down into their own pockets for \$500 to \$1,000 apiece to help build the good roads.

It is an economy for the state or the county to condemn and purchase land for the relocation of roads along lines affording easier grades and less distance. If road travel costs the low average of ten cents a mile, the relocation of arteries of traffic, saving for example only a mile of distance, permits an aggregate yearly saving

for the community of from \$3,650 where the vehicles number 100 a day, up to \$36,500 for 1,000 vehicles, and \$365,000 for 10,000 vehicles. The saving in time and operating cost of wagons, trucks and automobiles amounts to a huge sum per year.

The people are becoming educated to the fact that it costs less to build and maintain good roads than to pay for the invisible, but none the less real, expense of the annual mud embargo throughout the country.

Danger to the nation lies in the darkness of the rural communities where modern highways are unknown. If the people are to be free they must be educated. With the remote interiors shut off by bad roads, the people there will not get into touch with other people. Open up the interior with good roads; and these districts will be visited by people from everywhere, and education and enlightenment will follow from the contact with the big outside world. Then the native people will begin to buy cars and get out of the darkness themselves. "The real binder of a great country," says Vice-President Baackes of the American Steel and Wire Company, "is the system of reinforced-concrete highways, that brings the enlightenment of the whole world to doorsteps in the remotest corners of a township. It makes the greatest single element in upbuilding a state, and creates a united nation." Mr. Baackes is out to sell the steel for the reinforcement, but what he says is true.

The railroads have been shortsighted in the whole matter of transportation. Management by the absent-treatment method has been a failure. Presidents of railroads cannot sit in offices in far-away Wall Street, and properly take care of their properties. There might have been in existence an adequate system of fully equipped railways, if the executive heads had lived on the roads and sought to make them fit the needs of the communities served. Wall-Street and banker administration of railroads has both ruined the railroads and by continued neglect made possible the development of the fast-growing system of transportation of goods and passengers by truck over the solid concrete highways which pierce the communities that the railway bankers were too busy to pay attention to. Efficient resident management of railways would also have developed highways for trucks as feeders. Under existing conditions the average man wonders what use it is to bother about feeding traffic to railroads unable to handle what they get in normal times, and then at an exorbitant charge for the service rendered.

Certain it is that when the Golden Age has come, and both railroads and highways are owned and operated by the common people, the transportation systems will be conducted, not for profit, but for service. There will be better railways and better roads and enough of them to supply every need of the teeming-populace of the better time coming.

Why This Action?

THE law-abiding element of New York and vicinity has been perplexed at the following action of the New York County Committee of the American Legion. At a recent meeting, the Committee by a vote of two to one, representing 15,000 members, refused to pass the following resolution. Perhaps other considerations prevented favorable action at that meeting; but if the refusal represents by negation the position of the Legion, thoughtful citizens are shaking their heads, saying that they had expected better things of this body of fine young men, who profess to be supporters of real law and order. The resolution which was defeated read:

"Whereas the American Legion has lately been pub-

licly attacked upon the charge of having shown an alleged spirit of lawlessness, and upon having been further charged with failure to take any steps to curtail such lawless action,

"Now, therefore, be it resolved:

"That the American Legion of New York County indignantly repudiates the charge of lawlessness, standing adamant for law and order, and believing that men are free to think or write or speak as they will, provided that they do not trespass on the like privilege of or do injury to others, and wishes to record itself as condemning any activity in the direction of suppressing the rights inherited from our fathers, the most cherished of all rights guaranteed by the Constitution, the lawful exercise of freedom of speech, freedom of press, and freedom of public speaking."

The Disarmament Love Feast *By Newton T. Hartshorn*

AT WASHINGTON, on July 14th, President Harding is alleged to have said: "Tolerance, patience, good will and the desire to help some one else are the greatest needs of the world today. If I can make America represent good feeling throughout the world, my services will not have been in vain."

President Harding's motive is highly laudable; but under the prevailing conditions the result will be lamentable. Before the war good might have resulted from such a move, if repentance and reformation had accompanied it. But now it will merely put men to sleep, and add to the momentum of the current of the social and economic Niagara, just before it takes its final plunge at the falls.

The President's policy was what gave him his nomination and election. He was all things to everybody, even to the radicals like Johnson and Borah. In choosing his cabinet, however, he left out the radicals. This forecasts his policy in a still clearer light—unity of old elements, old, discredited world-forces—no reform.

From the standpoint of saving old conditions, the old evil world, even though it be merely bundles of corruption, imperial greed, stand-patism, bossism, profiteerism, special and class interests, Mr. Harding is taking the only logical course—to dope the patient, put it temporarily to sleep. He rejected the League of Nations, not because in his estimation its principle was not sound, but because its means of accomplishing its object (conservation of old conditions) were defective. And now, calling at Washington the conference of the Great Powers, he aims to construct a substitute for the League. But it is merely an attempt to lock the door after the horse has been stolen.

The economic mechanism of the world has been thrown out of gear and irretrievably wrecked. No amount of patching will restore it. A new machine must be constructed on an entirely new principle, with new motive power. Constructive action is imperative; a love-feast will not be constructive, but merely sedative. The old machine was constructed to run by concrete selfishness as its motive power. It wobbled a great deal before the war wrecked it. We have its motive power explained in an article

by C. B. Evans, a financial writer in the daily press. He says:

"Not everybody appreciates the intensity of the feeling among the heavy men [Big Business] in business with respect to such enterprises as characterized this country before the war. There is no such enterprise now, no creation, no entry into new lines, no outlook. The reason is that men commonly go into such things for gain. But the more gain now, the greater the percentage of tax on the capitalist. His avarice and his ambition are extinguished."

Just so; the sole motive power back of the machine was selfish gain, in large amounts. The machine can no longer be run by the motive power for which it was constructed. The war, through the frightful debt which it created, scrapped the machine; and Big Business with its confederates, the politicians and the ecclesiastics, is literally between the devil and the deep sea, through their insane lust for world empire. The German and the English imperialists, backed by their state churches and by American imperialists (political and ecclesiastical), deluged the world with blood, loaded it with debts, and destroyed faith in government.

Under the old governmental systems, based on this motive power of selfishness, public debts were a stabilizing influence because the bonds were held by the mass of its most prosperous and influential citizens. Always, when there has been a threat to overthrow government, one of the contingencies (as in Russia) has been the risk of repudiation of the bonds issued by the old régime, and then they would be worthless. Under this policy of carrying a heavy bonded debt, many a corrupt and tyrannical government has lasted when otherwise it would have been overthrown. This is the main influence on which the governments of today depend to pull through successfully; but it has been overdone to the breaking point, as in Russia.

Heretofore the payment of taxes and public debts has, through slick legislative acts and dodges, been shifted down and down onto the backs of the working people and of future generations. But never in the history of the world has the per capita of debt and taxes been so great as now. Not only capital is discouraged, but the working classes as well. The interest alone is a colossal tax.

We now see a powerful move to have the excess profit and income tax removed from the people of wealth and placed on sales; and in the fierce competition pending, all of a working man's wages must go in purchase of the bare current necessities. With no surplus he would pay the tax and the debt. If capital no longer has any incentive, neither has the working man. Some of the largest bond issues are tax-exempt. These gravitate into the hands of the capitalists, and by escaping the income tax they escape the bulk of taxation.

Here now is an insolvable problem, caused by the debauch of lust for world empire, led by British and German imperialists. Any one who knows history knows that England has been as guilty as Germany in this respect; and England is now residuary legatee of this infamous doctrine, the fruit of which is now fully ripe. The vine of the world has borne its fruit. Economic law is inexorable. It is the executive force of divine law; and the Court is now in session, pronouncing judgment.

Babson states that the law of averages is as invariable as the law of gravitation. Einstein states it in terms of relativity. It seems to me that Einstein's theory applies to economics as well as to physics. During 1919 the index pointed 200 degrees above average. The index now stands about 50 degrees above average and, according to the law of averages; must go many points lower. Even now the average market value of railroad stock is the lowest in twenty-two years.

President Harding, in his address to the Senate, presented the cold facts. He frankly expressed the opinion, in substance, that a further expenditure of three billion dollars by this country now would be the last straw that would break the camel's back and throw the world into bankruptcy. In fact, if we read between the lines, it seems that he thinks the camel's back is already broken and requires heroic remedies to restore. The usual program is a prayer-meeting followed by a love-feast. This time Harding's love-feast of the world's great leaders will be followed by a prayer-meeting. The feast of Belshazzar, on the night of the fall of Babylon, accurately types it.

As before stated, constructive action is imperative, if economic life is to go on. But we know with absolute certainty that no construc-

tive action by the recognized leaders will follow, because the problem is beyond them. They are mere babes. They do not recognize the impelling fact that the end of the old order of things has come; that the false philosophy which has dominated human affairs has, by its inherent defects, destroyed itself and the order that developed under it; that the inevitable working of the law of cause and effect has prevailed; that the condition falsely called civilization is dead, never to live again.

The Mutual Life Insurance Co., of New York, between 1916 and 1921 lost more than \$2,754,000 by depreciation of 35,640 shares of the New Haven R. R., for which it paid over \$100 a share. It has already sold 28,000 shares at between \$18 and \$35 a share. Estimated at an average of \$25 a share, the above loss has resulted. It holds yet 7,640 shares which at the present market value of \$18 a share would entail a still further loss. The fact that it has sold them at such a frightful loss proves conclusively that the opinions of the best experts in estimating stock values, present and future, that are consulted by these great financial institutions, do not indicate faith that New Haven stock will "come back". The New Haven is a fair representative of all the other roads.

Not unlikely under the stimulus of a large bonus most of the financial press writers put the best construction possible on the condition. These writers periodically announce that the bottom has been reached and that the time has come to load up. Then in a day or two after the "slippery" process of those "in the know" has overloaded the market, the bottom falls out again. The trouble is that most of the "lambs" have either been shorn or become wary, the suckers have all been salted, and from now on dog must eat dog, and bear claw bear.

As dividends disappear and bankrupts multiply, even the bears are afraid to hug the Wall Street buzz-saw.

Of all the profiteers the leather hogs were the most greedy. They were not satisfied to get merely their front feet into the trough, but they had to get all four feet in. The Leather Trust lost \$40,000,000 by the strike of the people *en masse* against the high price of shoes, etc. By common consent the people, without collusion, wore old shoes and old clothes, any old thing, rather than feed the profiteering hogs. The

Leather Trust is now \$10,000,000 in debt, and the end is not yet. This is merely one case in hundreds where economic law has applied the rod to the fool's back.

The railroad unions have taken a vote on the question of acceptance of the reduction of wages proposed by the railroad officials. The decision has been announced in the negative.

Union men report that the sentiment among the employes is strongly against accepting the reduction. They have been angered by the statement of the Employers Association that the men would yet be glad to eat out of their hand; and the men propose to test the accuracy of that assertion. The proposed national and international love-feast may unexpectedly be turned into a prayer-meeting in view of the tumbling value of railroad stocks and bonds and a railroad strike.

The host at the feast may have the letter "G" prefixed to it. The World Peace Congress assembled in Germany the day before the Kaiser declared war, and the delegates all fled in a panic. Will this history repeat itself?

Those who recognize the cold facts and refuse to cry, "All is well", may be scorned as hopeless pessimists and calamity howlers. We shall see what we shall see; and those who take a dope, shut their eyes and sleep, must not complain if they are awakened by the shriek of the cyclone and the crash of flying timbers, while they might be safe in the cyclone cellar.

"Seek meekness, seek righteousness; perad-

venture the Lord will hide thee in the day of his wrath."

Those who think that a communist or a socialist machine will do the work are in also for disillusionment. Those who think that the so-called Christian church we have known will do the work by merging into the kingdom of heaven are in for disillusionment. It has joined in the unholy debacle of war and slaughter. The blood of millions of innocent people is on its head. It is responsible for the present condition; for if it had stood like a rock against war (legalized murder) there would have been no war.

While this is going on, the railroads are loading themselves up to the muzzle with vice presidents and other nondescripts at fabulous salaries, in every possible way to squander the outrageous freight charges which have been wrung from the American people, so that they may seem to be justified in their efforts to drive down the wages of the real workers. Henry Ford, paying a minimum of \$6 per day to his men, takes the little Detroit, Toledo and Ironton Railroad, which he owns, runs it at a profit and reduces the rates twenty percent. Strange thing that the greater systems, with infinitely greater possibilities, are unable to make both ends meet. Years ago they were content to try for years to get a two percent raise in rates past the Interstate Commerce Commission. Now they ask for the earth, and after they have gotten it yell "Bloody murder!" that they are being ruined because they do not have the whole solar system. Make the acquaintance of any honest railroad auditor and ascertain for yourself whether the railroads are honestly trying to do the fair thing by the public or by their employes; or whether they are not, in a directly opposite sense, grafting in the most shameless manner, accumulating private fortunes and enriching relatives and friends in every direction—all as a result of opportunities opened up to them by the World War.

Cataracts and Chiropractic *By Alice Fuller*

FROM time to time I have observed articles in THE GOLDEN AGE for and-against chiropractic. The last one I read was from an M. D. from Canada, and it moves me to narrate a personal experience.

One year ago an eminent doctor of medicine, also an oculist, gave me six months or, at the furthest, one year, to go entirely blind with cataract in both eyes. I came home from the examination broken-hearted at the thought of going blind; for with nothing but my own labor to depend upon, the outlook was appalling.

Some of my friends interested a doctor of chiropractic in my case. This lady has treated me for over a year against great difficulties, for

the reason that in order to maintain a livelihood I have been compelled to do such hard work that I have used up most of my vitality and there was not much of a margin to go on.

Still, even with such a handicap, wonders have been done for me. I can now see a great deal better than I could a year ago. I can read and thread a needle better than I could then, instead of being stone-blind, as the specialist said I would be. I believe chiropractic is a blessing, and I thank God for drugless healing.

I admire those two chiropractors who went to prison rather than pay fines to the doctors. I am a subscriber, and wish you would publish this with my name.

Why the Gold Standard *By H. E. Branch, Rogersville, Mo.*

QUESTION: I wish to know why we are on the Gold Standard and a contracted system.

Answer: A careful analysis of our present social and commercial status and its cause will expose the animus of Capitalism in foisting upon the world what is known as the Gold Standard. Under our laws any unit of gold nine-tenths fine gold by weight and one-tenth alloy of other metal is our Gold Standard, and it defines all standard gold units. Prior to 1792 the Pillar silver dollar of Brazil and the Spanish milled silver dollar were the only DOLLARS known to our country. Our Monetary Commission of 1792 adopted the Silver Dollar of our daddies, weighing 412.5 grains of silver nine-tenths fine as our standard monetary unit. Our halves, quarters, and dimes are standard silver but light in weight, weighing only 380 grains to the dollar. Our monetary system is purely a standard of weight units and has no specific relation to value units. "An Act to Strengthen the Public Credit" in 1869 placed us on a bi-metallic base, and the "Crime of '73" put us on a gold basis and reduced the dollar in weight to 25.8 grains.

Our Gold Standard is a standard of gold *quality* regardless of size of units; and our monetary system, a standard of weight values, has no fixed relation to commercial values. Dimes, quarters, halves, dollars, eagles, etc., are terms defining *weight* units; and those units are absolutely stable and *never* vary in volume, structure, and weight value, and we can readily reduce those units to their equivalents in other units of weight. It is utterly impossible to define the meaning of commercial or trade values in terms that define or express nothing but gravity or weight values. Our monetary system defines nothing but weight units; and those units are absolutely stable; never vary in volume, structure, and function, never define anything but weights. If the world possessed a trillion of gold dollars, that number would not affect the volume, structure, or function of a single dollar by one iota.

The meaning or definition of a unit of *any kind*, once defined and demonstrated to public understanding, is settled for ever. The dollar, once correctly defined as a unit of value to popular understanding, will not admit of inflation or deflation any more than you can inflate or

deflate or change the meaning of bushel, acre, watt, or pound. Honest public sentiment will not permit a perversion of accepted facts. A defined unit or standard cannot be inflated or deflated by either courts or nations. Ohms, horse-powers, yards, leagues, fathoms, degrees, years, cubic inches, pounds, candle-power, calories, etc., though undefined, always existed and never varied in volume, structure, or function, and the number under consideration will not affect the service or meaning of a single unit.

This law of units is immutable. As we use terms, dollar, supply, demand, and price have no specific meaning and cannot affect the service of a single social unit. The Gold Standard reduced our debt-paying media by half, inaugurated the panics of '73 and '78, and confiscated from Industry a vast volume of social products and gave birth to tramps and trusts.

We have the tragic story of a lost and wandering calf that made a crooked trail. Another calf saw the trail and followed it; and then another, and another, and, finally, human calves discovered the trail and converted it into a popular highway. Thousands of years ago business men discovered a crooked fiscal trail and followed it when they weighed out shekels of silver, in payment for goods. Society saw that trail and without reason or intelligence has followed it for thousands of years, to its fiscal undoing. The scarcity of the precious metals as a monetary base makes cumulative debt inevitable. Debt is a needless burden that adds nothing to labor and natural resources, and is a rank violation of natural law and a crime against social order. Society should have collective intelligence enough to employ its labor and material resources for social uplift without paying unearned tribute to relatively a very few of its lecherous and grafting members.

With our domination of light, heat, steam, gas, electricity, and other natural agents combined with improved tools and machinery intelligently employed by industry, society will always have a surplus that will make famine and physical want utterly impossible on any part of mother Earth. We should guard and protect every member of our social body from social injuries, just as we guard and protect the members of our own physical bodies from

physical harm. "An injury to one is the concern of all."

Francis A. March, Ph. D., in "History of the World War", puts its monetary cost at \$249,000,000,000. The same author quotes the Federal Reserve Board as stating that the world's entire gold and silver product from the beginning of time to the present is only about \$30,000,000,000. The editor of the St. Louis *Globe-Democrat* places the world's entire gold product at less than \$8,000,000,000, and the *Literary Digest* quoted the London *Statist* to the same effect. Take out the gold used in arts, science, and manufacture, and it will reduce our available monetary gold to less than \$4,000,000,000. Yet gold is the only means of final payment of debt recognized by civilization!

Thus we see that the World-War cost is nothing but a debt that added not a single necessary thing to our resources. People constitute governments, and what the people owe the governments owe, and *vice versa*. Our national debt is the sum total of government and citizenship debts. Our railroads owe \$20,000,000,000. John Skelton Williams reported the resources (debts) of our banks and trusts doing a banking business at over \$59,000,000,000. Our national debt is at least \$350,000,000,000, and the world indebtedness is more than \$1,500,000,000,000. Our gold will not pay a quarter of a cent on the dollar of that debt; and scarcity of debt-paying media makes all interest many times compounded and explains the high cost of living and the social unrest complained of. No human agency can bring order out of the fiscal chaos caused by the crooked trail so long as the Gold Standard is employed. The only question is, Have we sufficient intelligence to clean up the wreckage and reorganize things on a safe and sane basis?

Why is it we are not allowed to earn our circulating medium instead of having to borrow it through banks?

Earning our circulating medium is the logic of practical common sense, and that currency would exchange products between points remote from each other on a basis of labor cost of production and exchange. It would eliminate debt, interest, dividends, profits, and speculation, and will be strongly opposed by the ruling class. The average labor cost or value, the only possible cost or value of any product, will practically never vary throughout the world. A failure

in one quarter will be overcome by bumper production in another quarter. Our railway corporations (members) had many units of non-interest-bearing circulating debts (sometimes called money), and they wanted interest. They issued debts, stocks, and bonds, capitalization, for about \$20,000,000,000 and exchanged them for public credits. The public built the roads from the ore in mines, gave the right of way to the completed enterprises, and was then kindly permitted by the railroad magnates to pay perpetual compound interest, dividends, and profits on the labor cost or value of its own productions or enterprises. During the last eighty years our public has paid in interest alone over \$300,000,000,000 on that capitalization, enough to duplicate the railways of the world more than five times over. In addition, the public puts up all operating expenses for improvements, huge lobby fees to corrupt our courts, congresses, and legislatures; also vast sums for vicious news propaganda and unearned profits. This applies with equal force to other great corporations and in lesser degree to all other corporations. We are easy marks.

Why was silver demonetized in '73? To expand debts.

Why was the exception clause placed on the greenbacks? Our patriotic bankers and rich men, while refusing to risk their coin on government bonds, perceived that in event the Government was sustained, the exception clause would guard banking interests by forcing the public to buy coin. It was placed there by the Senate, our House of Lords; and old Thad Stevens said: "It is a cunningly devised scheme that will work harm to every interest of this country except one". . . . "This note is full legal tender for all debts public and private, except duties on imports and interest on the public debt." The Government prostituted itself and dishonored its own obligations by refusing to honor them by acceptance in dues to itself. That is Americanism with a capital A, and it justly deserved the censure bestowed by old Thad. It caused depreciation of greenbacks.

What is the keynote of our industry? You will find that clearly explained in "Labor — The Unit [Standard] of Value", in *GOLDEN AGE* No. 39-40, dated March 16 and 30, 1921.

"The borrower is servant to the lender." From the origin of the barbarian tribe down to

the present time Debt has been the chain forged by self-constituted leaders to shackle and enslave Industry in order to filch its products. Debt is the only possible means of exploiting industry. It is a social toxin or fungus spread by "the captains of industry", and results in enslaving industry and robbing it of the fruits of its labors. Democracy, self-determination, independence, and "the rights of man", cannot materialize as long as the cancer of Debt gnaws at the public's vitals. The cause of social unrest and oppressive taxation, debt, is recognized by all and is assiduously cultivated when intelligence and reason demand its entire elimination. This public or national indebtedness in 1913 had grown to at least \$150,000,000,000, causing "the high cost of living, social unrest, and financial chaos everywhere existing". That fact was recognized by Democracy in 1912 in its platform, and relief was promised. Corporate and private debt, capitalization, is the chief cause of our social evils; and payment of our Government debt today, that contracted by our Congress, would leave the public debt, constantly augmenting, twice as great as in 1913 and would bring no relief. Reasonable profit (!) and other forms of private and corporate taxes levied on the public in violation of moral and natural law are destroying existing forms of government. Governments organized in harmony with natural law will be self-perpetuating. Anything "reasonable" can be defined and explained to public satisfaction and for ever removed from the realm of dispute. "A reasonable profit" has no existence in fact.

Many years ago James A. Garfield said in Congress: "Let me control the money [or debt] of a nation and I care not who makes its laws". With gold available for world currency, the only money recognized in final payment of debt, limited to less than \$4,000,000,000 and world debts aggregating more than \$1,500,000,000,000, it will readily be seen that our adopted fiscal system makes rapidly increasing debt or capitalization an absolute necessity. Our Government today is paying interest on its debts with other debts or promises to pay. Practically debt or capitalization is the base of all enterprise or business and has prostituted or pauperized all industry—has annually dug more graves than caused by the European war. About two years ago Standard Oil of New Jersey sold for

734. Great for Standard; tough on the public!

Why go after foreign trade? Why not employ our industry to supply our own necessities? The press informs us we have about 5,000,000 men in want and enforced idleness while the public is clamoring for improved service and greater production. We have the labor and the material to meet these demands. Why doesn't our Government find employment for all labor in construction just as it found it employment for destruction in 1917-18? Such a policy, if adhered to, would create a great surplus and drive gaunt poverty from our midst, but we cannot exhaust industry in payment of needless debts and supply public wants at the same time. The 6,000,000 men out of employment can no longer buy the needed products they created in the past, so enterprise must employ salesmanship, pay for transportation, etc., and take from the foreigner in interest, profits and dividends on capitalization what home labor is no longer permitted to create for itself from our abundance of raw material or give its energies in exchange for needed products.

Why not earn our currency or circulating medium by social service instead of borrowing it? That would destroy what is known today as capital or capitalization, make efficient industry the only aristocrat and business merely a subordinate branch of labor. The gold digger receives from the government, in exchange for his gold units, currency or certificates in different denominations of units as defined by the volume and character of labor-energy employed in their production. The possession of one of these certificates is evidence that its possessor has rendered public or social service of the volume denominated by the certificate and is entitled to a like volume of service in other products in exchange for it. That method should be employed with coal, copper, steel, wheat and all other social products or units. These certificates are merely receipts and not debts in any sense of the term. The government, the people, the public, cannot borrow from itself. It is not only a proper function but also a sacred duty of governments to issue certificates or credits in acknowledgment of social service rendered in any field of industry. These certificates or credits would inaugurate a fiscal system meeting all public requirements and in harmony with natural law.

Effectiveness of Vaccination *By H. A. Rutschow, D. C.*

IN THE April 27th issue of THE GOLDEN AGE Mr. G. del Pino gave a very good review on "How Vaccines Work", and truthfully starts his paper with the statement, "What is *supposed* to happen inside of the body when the vaccine is introduced by the doctor is little comprehended by many people".

Vaccination is *supposed* to make the vaccinated immune to some certain disease, or at least to allow it to appear only in a mild form. The big question is, Does it really do this? This question is a vital one to us and to the future welfare of the human family; and judging from its past the answer is an emphatic no.

Germany and Japan gave the practice of vaccination the most thorough trial possible by compulsory inoculation, after which both countries were visited by the worst and the most fatal epidemic in their histories. England gave this practice a fair trial, especially in her armies; and finding that an appalling increase in tuberculosis followed in its wake, she revoked the compulsory vaccination laws. What else but vaccination could it have been that decreased the resistance of the boys in our own army in the late war? The influenza, formerly known as la grippe, took a terrible toll in the camps, where the boys were well fed and received plenty of outdoor exercise; and the hygienic conditions of the camps were excellent. The reverse should have been the case; but the mortality rate was nevertheless deplorably high. Our Philippine army of not so long ago was thoroughly inoculated against smallpox; and yet smallpox broke out and left in its path a record death-rate.

When the Creator said of the creation of man that it was very good, He was most surely right. These wonderful bodies of ours were originally endowed with the ability to combat *all* diseases successfully. If an individual body fails to do this, there is something wrong with that body, and not always with its environments, as some would make you believe. This weakness or inability to resist a disease can be permanently overcome only by removing the cause, and not by the injection of foreign and questionable material into this delicate machine of ours.

The day is at hand when bodily weaknesses can be definitely overcome by the correction of physical defects causing these weaknesses. This

brings the body back to the stage that the Creator designed it should be, which is health and the successful resistance of disease.

Mr. G. del Pino in his writing summarizes the action of vaccine as stimulating certain tissues of the body which have to do with the production of antitoxins. If this is true, is the practice at all scientific and reasonable when every individual vaccinated is given practically the same strength vaccine? If a person were naturally immune, this undue stimulation, if repeated frequently enough, could be nothing else but harmful. Again, this tissue of the body which produces this colloid substance, or antitoxin, may already be in a highly stimulated state due to some circulating toxins which the eliminating organs had failed to throw off, or which may be in a constant state of production from some degenerating tissue in the body. Now then, if this tissue is whipped into greater action by a vaccine, it is no wonder if the body weakens under this added strain, thereby making the individual more susceptible than ever, especially to some other disease. When this vital protective tissue breaks down, resistance goes with it; and the body is then left helpless to the ravages of disease. This practice is no more scientific than is the administration of stimulants to overcome costiveness. They lay the foundation for further trouble.

Let science seek to develop those powers which we have within us, and not fly off on tangents by trying to make improvements by adding to or taking away from what a greater Mind than ours deemed good.

Atlanta and The Golden Age By C. P. Bridges

A FEW days ago a gentleman whom I recently obtained as a subscriber spoke to me on the street, saying, "That paper is the finest thing I ever read. We don't get any such reading as that in any other paper. I shall keep them on file for further reference." This man is a Socialist, and has been one for years. He takes the Socialist publications, and yet he says this paper beats anything he ever saw. I thought that this was very encouraging. He wanted to know who wrote these things, and I told him that they are the same men who were sent to Atlanta for telling the truth.

American Poultrymen Betrayed *By H. E. Branch, Rogersville, Mo.*

THE American Poultry Association (A.P.A.) was organized Jan. 15, 1874. It is composed of city and town men and women, called fanciers, without experience in commercial poultry breeding. Its standard of breeding (Standard of Perfection) does not describe a single breed or demand utility merit in fowls. For breeds it illustrates and describes an imaginary male and female of fixed weights. The weight clause is rigid and exceeds market requirements. "The practice of allowing a few ounces is strictly forbidden," the Standard of Perfection says. Plymouth Rock, Wyandottes and R. I. Reds are no more uniform in weights than are Caucasians, Short-horns, and Berkshires; and all practical breeders know that rigid breed weights are rank folly. It breeds fowls for bay eyes, five point combs, wattles of defined size, shape and texture, nice color distinctions, tails carried at a defined angle from horizontal, rigid defined weights; etc. It has but one purpose—to hold fancy shows to advertise fancy fowls. Its "Constitution and By Laws" says:

"Any poultry association or society organized for the purpose of giving annual exhibitions, and whose rules show that it holds such exhibitions under the show rules of the A. P. A., may become a member of The Am. P. As., by paying a membership fee of ten (\$10.00) dollars at the time of applying for membership."

A breed consists of many individuals of the same general character, bred and developed for a specific purpose. Breeds exist before breeding associations can be formed; hence breed definitions or standards are common property and not subject to copyright, though the Standard of Perfection, the poultry standard, is copyrighted by the American Poultry Association [A.P.A.]. It controls poultry breeding, poultry press, poultry departments of farm papers and all poultry exhibitions in the United States. Judge T. F. McGrew at its 1911 Denver convention said: "I am on record as having offered the A. P. A. \$5,000 for authority to issue a practical utility poultry standard and derive the profits therefrom". McGrew knew that no farm or poultry journal would carry his ad without that sanction of the A. P. A. Years ago I was barred from the poultry press by T. E. Orr, now deceased, Secretary-Treasurer of the A. P. A., and Dr. Sledd, who was an A. P. A. member,

was kicked out of the Tenn. Poultry Station and editorship of the *Industrious Hen* because we catered to practical poultry interests. Except Dryden of Oregon and Wheeler of R. I., I know of no other poultry officials in the U. S. who are not A. P. A. members. *Successful Farming* turned down "Lessons from Egg-Laying Contests", though it afterward paid me \$14.38 for an article on "Utility Breeding". What Creel and Sinclair said of the Associated Press applies with equal force to farm and poultry papers. Organized and money interests direct their policies. I have data in proof. The above will serve as a prologue to what follows.

LESSONS FROM EGG-LAYING CONTESTS

During the past fourteen years many egg-laying contests and tests have been conducted by Australia, New Zealand, England, France, South Africa and other countries. During 1912-13-14 international contests in laying were conducted at Storrs, Ct. and Mt. Grove, Mo. I secured circular records from Storrs, and got the Mt. Grove records for 1913 from the *St. Louis Weekly Globe-Democrat* of Dec. 5, 1913. Mt. Grove informs inquirers that it has no data of past laying contests to give out. These contests have cost the public many thousands of dollars, but no thought-provoking contrasts have been drawn or useful information imparted by our stations, farm and poultry press as a fair equivalent for taxes spent. By authentic corroborative reference I intend to direct attention to cold facts of startling import to our poultry industry.

With our favorable climate, diversity of foods, and abundant range, no other country under the sun is naturally qualified to compete with us in successful poultry culture. Canada with her long, rigorous winters and England with her moist, foggy climate and restricted range are especially at a decided disadvantage. Again, hens, after a long voyage to a strange climate and changed conditions, cannot be expected to do their best. Except in general summary I shall devote my attention at Storrs to our great commercial breeds, White Leghorns and White Wyandottes, their annual egg average each by pens, for the years 1912-13-14 consecutively.

In 1912 our Leghorns averaged 154.7 eggs each; England 196.4 each, on a full complement base without a full complement of hens. Our Wyandotte average, 153.2, Canada's, 213.8. In 1913 our Leghorns, 166.9; England's, 216.7; Canada's, 178.6; Wyandottes, ours, 145.2; England's, 185; Canada's, 162.6. In 1914, our Leghorns, 140; England's, 201; Wyandottes, ours, 160.2; England's, 208.5. At Mt. Grove in 1913 and at Storrs in 1912-13-14, Canada's lowest average of nine pens was 130 eggs; England's lowest with ten pens, 168; our lowest was 55. We had thirteen pens ranging from 55 to 98 eggs per hen, and we had forty-eight pens ranging from 55 to 129, lower than Canada's lowest. Our range is very wide, from 55 to 214; Canada's range is narrow, from 130 to 213; England's 168 to 238. All foreign countries have a narrow range, showing uniform good breeding and great productiveness.

T. E. Quisenberry places our general average at 72 eggs per hen; Miller Purvis, at 75 eggs per hen. A. A. Coult, Pres. Missouri State Poultry Board, said in *Technical World*, Feb. 1913, that hens were taken, not selected, from sixty Australian flocks that averaged 160 eggs each.

I quote from *Youth's Companion*, Aug. 20, 1914:

"The investigations of French poultry raisers show very clearly that hens produce the most eggs during the first year of their laying period".

L'Illustration of Paris prints the following interesting table in support of that conclusion.

	1st year	2nd year	3rd year
Number of Hens	60	60	60
Total Eggs	10,280	8,943	6,907
Average per Hen	171.3	149.1	115.1
Value	\$214	\$186	\$144

For this test selected prolific hens were not required, and, compared to other foreign tests and contests, it is fair to assume that the 60 French hens are the average of that country. W. F. Kirkpatrick, Director at Storrs, places the annual maintenance cost at \$1.70 per hen. Employing the figures given by Quisenberry, Coult, *L'Illustration* and Kirkpatrick, we get the following results:

	GROSS INCOME PER HEN	MAINTENANCE	PROCEEDS
United States	\$1.50	\$1.70	Net loss \$.20
Australia	\$3.33	\$1.70	Net profit \$1.63
France	\$3.56	\$1.70	Net profit \$1.86

Statistics from *Successful Farming* report 5,585,032 United States farmers raising domestic poultry numbering 488,468,354. Allowing 88,468,354 for chicken cocks, turkeys, geese and ducks, leaves 400,000,000 hens on United States farms, giving a gross annual egg income of \$600,000,000, at a maintenance cost of \$680,000,000, showing a net annual loss of \$80,000,000 to our poultry industry. If our hens had an earning capacity equal to Australian and French hens, instead of actual loss our hens on Australian basis would give an annual egg profit of \$652,000,000; on French basis, a net profit of \$744,000,000.

Annual value of our poultry products, including turkeys, geese, ducks, chickens, cocks and feathers is less than \$800,000,000. On French basis it would be over \$1,800,000,000 per annum.

Other contests emphasize our great inferiority in the poultry industry. *Farm Journal* of Philadelphia, Jan. 1914, reports three Leghorn pens of six hens each in New Zealand contest averaging 241, 242 and 244 eggs respectively. Miller Purvis, in *Breeders' Gazette*, Sept. 2, 1915:

"At two other competitions [countries not given] where 660 hens were under test, the average was 190 eggs in a year. During the first ten years of the Australian competition in which time 4,008 hens were tested, 31 varieties being represented, the general average was 166 eggs."

We had hens in one of the first Australian contests that reduced the general average. Contrasts are very humiliating to us in the poultry industry even when we omit facts or distort them to our own advantage. Speaking of Mt. Grove contests, the report reads, "The general average was around 150 eggs in a year". Other countries were not represented in 1912 contest at Mt. Grove. Of 1913 contest, the report has it: "The hens averaged over 143 eggs [fraction not given] per hen, a gain of nearly ten eggs per hen". That average included Canadian and English hens averaging 182 eggs each. English hens averaged 207.3 eggs each. Missouri hens in that contest averaged 138 eggs each. Canadian Black Orpingtons averaged 157 eggs each. Missouri Black Orpingtons averaged 101 eggs each.

Is it fair or even honest in discussing these contests to ignore entries from other countries and to withhold honors where honors are due? Why not be frank in discussing laying contests,

give foreign records and the system of breeding that made those great records possible, so that we can benefit therefrom? If the shoe were on the other foot, our poultry and farm editors would take great delight in ridiculing a foreign system of poultry breeding that made poultry husbandry a losing enterprise. Have our poultry officials, experts and editors offered to make plain the cause of our great inferiority in poultry culture? No; their writings and bulletins never call attention to the plain facts I am giving. In fact, they garb the truth in such a way that its own mother wouldn't recognize it.

So far as I know our poultry breeders have never entered but one foreign contest, and our papers have never boasted of the records they made. In our international laying contests eggs from other countries assist in the general average. We put things in the best light possible for ourselves — and no explanations. I quote again: "160 eggs, the average of 1,000 properly fed hens in the Missouri egg-laying contest for one year". The greatest number of entries of which I have knowledge, in any egg-laying contest at Mt. Grove was 820 hens.

In speaking of 4,008 ten-year Australian records averaging 166 eggs each per annum, Mr. Purvis said: "This is a better record by about 15 eggs than has been made in America". Even including hens from other countries in our averages, no contest in the states has even reached 150 eggs as an average.

The American Poultry Association is a product of the United States, and boasts that it is the greatest breeding organization in the world; but it does not point to egg-laying contests for proof. It has its lobbies in Congresses and State Legislatures. It is 41 years old and controls our poultry industry. It defines methods of breeding and of judging fowls, and boasts of its accomplishments; but it does not contrast its meager results in poultry products with the great ones of foreign countries as proof of its usefulness. The only places where its prominent members, breeders, and exhibitors distinguish themselves are at fancy shows. No prominent member ever entered his prize winners in a utility contest to prove the value of his breeding system. Australia taught a lesson not readily forgotten. No pen with a great authentic egg record ever competed at a fancy show. Its prize winners are worthless and a curse to our

poultry industry! Re-read this for proof.

Lady Show You, pure-bred White Rock hen with an annual record of 281 eggs, was taken to the fancy State Show at Springfield Mo., Dec. 1912, but was not entered. If an editor of a farm paper even suggests that the Standard of Perfection, the breeding guide of the American Poultry Association, our only authority, does not cater to utility interests, it proceeds to muzzle him. The method or system of breeding and judging merit in fowls so popular and profitable in foreign countries, if employed here would destroy the American Poultry Association. At its 1913 convention it was proposed to substitute for fancier the term breeder in the Standard of Perfection. Only three members spoke in favor and many against. Pres. Hicks directed attention to the fact that in poultry catalogs and reading designed for the general public the term fancier is seldom used. When asking for public funds or farmers to buy their prize winners, these gentlemen cease to be fanciers and become strictly practical utility breeders. A member of its Executive Board, said: "But there are hundreds of breeders that are not fanciers. There are men that want them just for the purpose of producing meat and eggs. Now, we don't want to make those men the most prominent." The practical breeder has no standing with the Am. P. As.

What 5,385,032 farmers of this country who breed poultry want to know is whether poultry breeding is an industry and commercial enterprise or merely an amusement and pastime for fanciers; also why our poultry officials suppress facts which the public pays them handsomely to publish. "There's a reason."

New Way to Feed Chickens

By W. G. Coble

I PLACE a bright light in the chicken pen for the first two or three hours after dark. This attracts the insects, which gather in great numbers, only to be gobbled up by the chickens. The increase of eggs, the decrease in feed bills, and a part in the extermination of useless or harmful insects amply pays for a few minutes spent each evening in caring for the light. The same ends can be obtained by flashing on a light in the chicken pen two or three hours before the chickens' usual rising time. Besides the additional food supply, the chickens have a longer working day and lay more eggs in a given time.

Modern Midianites Hard at It *By R. H. Barber*

SOME interesting developments of recent date have stirred the community of Clare, Michigan, and surrounding towns, and herewith is a brief report. It seems to throw a further side-light on the sectarian conflict now under way, and I am wondering if this condition is quite general. About three weeks ago, a woman—a former nun—gave a talk in a park in this city, exposing the terrible conditions in the convents. The next afternoon she was to speak again, to "Ladies only", in K. of P. Hall. A Mr. Howland, former mayor of Flint, Michigan, was to introduce the former nun, at the second meeting.

At the time for the meeting to begin A. J. Daugherty, mayor of Clare (a Catholic) appeared on the scene and announced that the meeting would not be allowed to proceed. Mr. Howland protested that the mayor had no right to interfere. Whereupon the mayor slapped Mr. Howland's face, and seizing him began to drag him toward the door, and succeeded in tearing Mr. Howland's shirt off his back. He succeeded also in bringing the wrath of the assembled ladies down on his head, and they beat him over the head with chairs, destroyed his \$12 hat, etc. But the meeting was broken up. The M. E. Church was then offered to the lecturer, where she gave the lecture on the evils of convent life, to a crowded house, protected by private citizens and soldiers. A petition of large proportions is now being circulated demanding the mayor's removal from office.

A week later Mr. Howland returned with a Mr. De Long, who lectured in the various churches every night for a week, exposing the evils of parochial schools and convent life, illustrated with pictures of actual occurrences, protected from the fury of the K. of C. by citizens specially deputized for that purpose. A neighboring city, Mt. Pleasant, sent an invitation to Messrs. Howland and De Long to give a series of lectures in that town; and the mayor of Mt. Pleasant and the order of *Masons* guaranteed protection.

I understand that warrants have been sworn out for the prosecution of the mayor of Clare. The city and the surrounding country are much aroused and incensed; and some Catholics have openly declared that if only one-half of the exposures are true, they are done with Catholicism forever.

Another result of the near-riot is that the people have demanded a vote of the citizens to oust Catholic teachers from the public schools. A still further result is that a petition is being circulated for the recall of the governor of the State, who is a Catholic. It seems that *all* of the officials of the city are Catholic; and demands are being made that all these offices be vacated.

I do not know how widespread these protests against Catholic separate schools, and Catholic domination of public schools, have attained; but the Protestants are thoroughly aroused.

History in Brief *By W. G. Coble*

TO THE world there is now a "Jewish Question", which is widely described from a secular viewpoint. There was once a "Gentile Question" among the Jews just before the overthrow of the Jewish polity in A. D. 70. This subject is clarified when placed in the strong searchlight of God's Word, which has enabled Bible students to have a clear conception of the entire situation.

The "times of the gentiles" had their beginning in the days of Israel's last king, Zedekiah (606 B. C.), when God removed the crown (authority to rule) from Israel and gave it to the gentiles—first to the Babylonian Empire, then

to Medo-Persia, then to Greece, and last to Rome, as illustrated in Nebuchadnezzar's vision of the great image and in Daniel's vision of the four beasts. (Daniel 2 and 7) But although the crown was removed, the scepter (right to rule), did not depart from Judah until Shiloh (peacemaker) came. (Genesis 49:10) Then it was given to Him; and He who put an end to the law by nailing it to His cross now holds this scepter (or title to authority) as King of kings and Lord of lords.—Romans 10:4; Colossians 2:14.

God had warned Israel three times before taking their dominion that He would punish them

"seven times" if they would not hearken unto Him. But they would not, and therefore have received the "seven times" in full—the "gentile times" which ended in A. D. 1914.

A symbolic year as used in prophecy is reckoned on the basis of an adapted lunar year—twelve months of thirty days each, or three hundred and sixty days, each day representing a year. Consequently a "time", or year, if symbolic, signifies three hundred and sixty symbolic days; and "seven times" represents twenty-five hundred and twenty (7x360) symbolic days, or 2520 literal years. This period ("seven times" or 2520 years) of Israel's punishment is the period of gentile dominion, "the times of the gentiles".

Since, as it has been shown, the "gentile times" began in B. C. 606 and were to continue for 2520 years, they were to end in A. D. 1914. (2520-606-1914) From that time we have seen God's favor returning to Israel. He is gathering them from all nations where they have been scattered, and bringing them to the land of their fathers. God will fulfill to Israel the covenant made with their fathers.—Leviticus 26: 44, 45; Deuteronomy 30: 3; Romans 11: 25-27.

With the ending of the "gentile times" in

1914, we saw the beginning of the disintegration of those powers. The kingdom of God is now in preparation of establishment. It is smiting the gentile image (Daniel 2: 34, 44, 45); and its own power and dominion will be established as it crushes and scatters the "powers that be", civil and ecclesiastical—iron and clay.

In a widely circulated series of anti-Semitic articles a distinction is made between Jewish and gentile financiers — hog eat hog, capital against capital, with its trickery entailed. This split in the strong man's house is the result of Satan casting out Satan; and the crumbling of his house (Matthew 12: 26, 29) is sure to follow. We hear loud, spasmodic cries of a dying world, a world where selfishness and pride have had the dollar enthroned.

It is only a short time now until all will recognize the great Prince of Peace to be King of kings and Lord of lords; for there shall be a "new heaven [spiritual powers in control, the glorified Christ, Head and body] and a new earth [earthly society reorganized under God's kingdom, on the new basis of love and justice, instead of selfishness, might, and oppression], wherein dwelleth righteousness".

Other Nations Like Japan *By G. H. Martin*

HAVE read your article contained in two issues of THE GOLDEN AGE, beginning Feb. 16th, on "Japan the Frankenstein of Christendom," and would say that an impartial deliberation of your statement shows the most striking similarity of plan and purpose between this awakened yellow man and the so-called white man—even the American white man.

In proportion as we have grown in strength, we have reached out and with unwelcomed hands appropriated the God-given heritages of others! This sin has swollen the country from the original thirteen states to our forty-eight states at present, plus our insular possessions.

Having been the white man's pupil, Japan naturally reaches out, too, as she grows in strength—wrong, perhaps, but nothing strange about it, different from the rest. Her English ally has committed more crimes along this line than have all other modern nations combined! I sense no alarm from a hundred thousand Japs here and another such number in

the island of Hawaii or in Manchuria!

I ask you to turn your eyes from the well-behaved, frugal Jap. Look at the world's map and at the bloody conduct of your European brother, and see how he has raised more hell on earth—leaving out ratio—than all the darker peoples combined.

Africa, Egypt, Australia, parts of Asia, and all of America have been stolen from the aborigines of these continents and hemispheres!

Of course, you said that the white man had not been altogether righteous and therefore must suffer loss. But the burden of your argument seems to lie mainly on the Japs.

EARTH IS WEARY

Ages we tried the way of swords,
And earth is weary of hostile borders,
Comrades, read His words again,
They are the only hope for men,
Love and not hate must come to birth,
Christ, and not Cain, shall rule the earth.

By Edwin Markham

Granite and a Prediction *By H. E. Coffey*

GRANITE is one of the hardest of building stones. It is a crystalline, igneous rock, composed chiefly of quartz and feldspar. The lava from which granite was formed cooled and crystallized far below the earth's surface under great pressure. Where it appears on the surface in many regions the overlying and softer rock has been removed by exposure to erosion. Granite formed during past ages, and still is wherever mountain formation is taking place.

In central Texas occurs one of these outcroppings of granite known as Granite Mountain. From hence was procured the stone used in building the state capitol, which was for years the largest and most costly structure of its kind in America, and for constructing the seawall at Galveston, a Texas port which suffered enormous damage from a tropical hurricane in 1900. In this region we find both red and blue granite. Many other granite quarries abound in various sections of our country, but we have a special reason for being interested in this quarry and in this kind of rock.

Only recently there was erected a monument which promises to become dear to the generations now living and to those yet to be awakened from the tomb. This monument was made from granite of the kind above mentioned, and rests in the center of the burial plot belonging to the International Bible Students Association. The huge stone was transported on an especially constructed flat-car to Pittsburgh, Pa., the city near which the monument was to be erected. In the not distant future this stone, or things hidden in this stone, will reveal to the people information which will be appreciated much as that disclosed by the Great Pyramid of Egypt has been appreciated by those having eyes and ears to discern spiritual things. Lo! millions now living have yet to learn that a Prophet of the Lord has been among them; and this they assuredly will learn. In the pink granite monument at Pittsburgh lie hidden the gems of Truth which will become doubly bright and shine in all their splendor in the Golden Age now dawning.

Sweeter than Honey *By H. E. Coffey*

THE peoples of the earth have a large sweet-tooth; and everyone remembers how difficult this was to satisfy during the war. We value sugars, honey, etc., chiefly according to their sweetness, and not primarily for their food values. Of the various sweets honey has long held the distinction of being the sweetest. However, recent discoveries indicate that honey and other sweets now used will eventually be displaced largely by a cheaper and sweeter sweet; and thus the popular craving for sweets will be met. Great will be the public benefit.

Of the various manufactured sweets of commercial importance sucrose is probably the sweetest. But the sweetest sugar thus far discovered is levulose, or fruit sugar. This sugar is found in all fruits, honey and sorghum. However, it occurs most abundantly in the form of inulin in the tubers of the Jerusalem artichoke and in dahlia bulbs. While inulin is a polysaccharide resembling starch, yet unlike starch, which yields glucose on hydrolysis, inulin yields levulose, the sweetest form of sugar. Fresh

artichoke tubers contain from twelve to fourteen percent of inulin, and they yield at the rate of one thousand bushels per acre. If we reckon the yield of tubers at 40,000 pounds per acre, and estimate that ten percent of the total inulin is recovered or removed, it would mean a yield of 4,000 pounds of sugar per acre. This is a much higher yield of sugar than is obtained from sorghum, sugar beets, and other sugar-producing plants.

Nothing is yet known concerning the isolation and hydrolysis of inulin on a commercial scale. But when a process is perfected, as it doubtless will be in the not far distant future, the demand for sweets will be easily met for all time. Had such a process been perfected and put into use before the great war, there would never have been an opportunity for the profiters to corner the sugar market. Yet even now the proverbial riddle has been answered, "What is sweeter than honey?" (Judges 14:18) Fructose, or fruit sugar, is the sweetest sweet of which we have any knowledge.

It Can Be Done By G. R. Baird

REGARDING the article by W. A. Groves, of Canada, on "Chiropractors and Chirurgery", in your edition of April 27, he states that "no one who knows the anatomy of the spinal column would seriously contend that a vertebra, unless suddenly and violently displaced, could be adjusted into its natural position by a sudden and skillful movement of the hands". That statement must have come from a graduate of a school which once taught that the brain is a sponge for cooling the blood, and which persecuted the man who first said that the blood circulates.

Chiropractic adjustment of vertebræ is not accomplished by a sudden and skillful movement of the hands alone. The hands make the contact with the spine; but the main force is supplied by the large muscles of the abdomen, where the largest muscles of the body are located. Wrestlers and prize-fighters know that the weakest man's abdominal muscles are stronger than the strongest man's arms; and it is the thrust coming from this section of the body which moves the bone. There is a machine for registering the force of a thrust, and I have seen a student weighing less than one hundred and twenty pounds deliver a thrust which sent the indicator around to nine-hundred and thirty-

six pounds—a comparatively impossible thing to do with the muscles of the arms or the hands alone.

Considering this, and also the fact that the muscles of a patient lying on a Chiropractor's table are thoroughly relaxed, it can be seen that the force of the abdominal muscles, applied in conjunction with that of the arms and the hands, can adjust a bone to its normal position.

There is a number of wrinkled-browed skeptics who continually sing the pessimistic chorus, "It can't be done". When, steaming up the Hudson in his dinky little boat, Fulton said that some day steam would take ships across the countless wastes of sea, they chorused, "It can't be done". When the early Canadians suggested the building of a railroad from coast to coast, the leading engineers looked toward the Rocky Mountains and moaned, "It can't be done". Universities joined the chorus when the Wright Brothers first said that a machine heavier than air could be made to fly.

I am giving this secret of our science free, and would like to be able to teach the entire medical profession how to lower the death rate of their patients until it could be on a level with that of chiropractors. But I am afraid *it can't be done!*

Effect of Cigarette Smoking

YOU smoke thirty cigarettes a day?"

"Yes, on the average."

"You don't blame them for your run-down condition?"

"Not in the least. I blame my hard work."

The physician shook his head. He smiled in a vexed way. Then he took a leech out of a glass jar. "Let me show you something," he said. "Bare your arm."

The cigarette smoker bared his pale arm, and the other laid the lean, black leech upon it. The leech fell to work busily. Its body began to swell. Then all of a sudden a kind of shudder convulsed it, and it fell to the floor dead.

"That is what your blood did to that leech," said the physician. He took up the little corpse between his finger and thumb. "Look at it," he said. "Quite dead, you see. You poisoned it."

"I guess it wasn't a healthy leech in the first

place," said the cigarette smoker, sullenly. He wasn't satisfied yet.

"Wasn't healthy, eh? Well, we'll try again."

And the physician clapped two leeches on the young man's thin arm.

"If they both die," said the patient, "I'll swear off—or, at least, I'll cut down my daily allowance from thirty to ten."

Even as he spoke the smaller leech shivered and dropped on his knee dead, and a moment later the larger one fell beside it.

"This is ghastly," said the young man; "I am worse than the pestilence to these leeches."

"It is the empyreumatic oil in your blood," said the medical man. "All cigarette smokers have it."

"Doctor," said the young man, regarding the three dead leeches, thoughtfully, "I half believe you're right."—*New Zealand Outlook.*

Advanced Studies in the *Divine Plan of the Ages*

(May be read connectedly,
omitting the questions)



The popularity of the Juvenile Bible Studies, among our numerous subscribers, has led us to believe Advanced Studies for the adults would also be appreciated.—Editors



THE DAY OF JUDGMENT

245. *What Scriptural ground is there for belief in a day of judgment?*

"God hath appointed a day in the which he will judge the world in righteousness by that man whom he hath ordained"—"Jesus Christ, the righteous." "For the Father judgeth no man, but hath committed all judgment unto the Son."—Acts 17:31; 1 John 2:1; John 5:22.

246. *What is the general view of the day of judgment?*

A very vague and indefinite idea prevails in regard to the day of judgment. The view generally entertained is that Christ will come to earth, seated upon a great white throne, and that He will summon saint and sinner in rank and file before Him to be judged, amidst great convulsions of nature—earthquakes, opening graves, rending rocks and falling mountains; that the trembling sinners will be brought from the depths of everlasting woe to hear their sins rehearsed, only to be again returned to an eternal and merciless doom; and that the saints will be brought from heaven to witness the misery and despair of the condemned, to hear again the decision in their own cases, and to return. According to the prevailing theory all receive their sentence and reward at death; and this, which by way of distinction is commonly called the general judgment, is merely a repetition of that first judgment, but for no conceivable purpose, since they claim a decision which is final and unalterable is rendered at death.

247. *How long is the day of judgment generally supposed to be?*

The entire time supposed to be assigned to this stupendous work of judging billions is a twenty-four hour day. A discourse once delivered to a Brooklyn congregation voiced the general view on this subject. It affected to give a detailed account of the work of the day of judgment, representing it as completed within the limits of a single literal day.

248. *What parable is used as the basis for these erroneous views, and how is it misapplied?*

This is a very crude conception, and is entirely out of harmony with the inspired Word.

It is drawn from a too literal interpretation of our Lord's parable of the sheep and the goats. (Matthew 25:31-46) It illustrates the absurdity of attempting to force a literal interpretation upon figurative language. A parable is never an exact statement, but merely an illustration of a truth by something which is in many respects like it. If this parable were a literal statement of the manner in which the judgment will be conducted, it would apply to literal sheep and goats, just as it reads, and not to mankind at all. Let us now look at a more Scriptural as well as a more reasonable view of the work and the result of the great judgment day which God hath appointed, with which reasonable and Scriptural conclusions all parables and figures should and do agree.

249. *What does the term judgment properly signify?*

The term judgment signifies more than simply the rendering of a verdict. It includes the idea of a trial, as well as a decision based upon that trial. And this is true not only of the English word judgment, but also of the Greek word which it translates.

THE TERM DAY FREQUENTLY SIGNIFIES ANY DEFINITE OR SPECIAL PERIOD OF TIME

250. *How is the term day applied both in Scripture and in common usage?*

The term day, both in the Scriptures and in common usage, though most frequently used to represent a period of twelve or twenty-four hours, really signifies any definite or special period of time. Thus, for instance, we speak of Noah's day, Luther's day, Washington's day; and thus in the Bible the entire time of creation is called a day, where we read of "the day that Jehovah God made the earth and the heavens" (Genesis 2:4)—a long, definite period. Then we read of "the day of temptation in the wilderness"—forty years (Hebrews 3:8, 9); "the day of salvation" (2 Corinthians 6:2); also the "day of vengeance," "day of wrath" and "day of trouble"—terms applied to a period of forty years in the close of the Jewish age, and to a similar period of trouble in the end of the gospel age.

Then again we read of the "day of Christ", the "day of judgment," and "his day"—terms applicable to the Millennial age, in which Messiah will reign over, rule and judge the world in righteousness, granting trial as well as rendering sentence. And of that period it is written—He shall judge the world in righteousness, and in His day shall show who is that blessed and only potentate, the King of kings and Lord of lords. (Acts 17:31; 1 Timothy 6:15) Why any should suppose this day of judgment to be of but twelve or twenty-four hours, while recognizing the wider meaning of the word day in other similar cases, is beyond comprehension, except upon the supposition that they have been influenced by tradition, without proper evidence or investigation.

251. *What does a consultation of any Bible Concordance reveal with respect to the character and amount of work to be done in the day of judgment? And what is the reasonable conclusion to be drawn therefrom?*

Those who will carefully consult a complete concordance of the Bible with reference to the day of judgment, and note the kind and amount of work to be accomplished within that period, will soon see the absurdity of the common view, and the necessity for giving to the term day its wider significance.

252. *Do the Scriptures refer to more than one judgment day?*

While the Scriptures speak of a great judgment or trial day yet future, and show that the masses of mankind are to have their complete trial and final sentence in that day, they also teach that there have been other judgment days, during which certain elect classes have been on trial.

THE WORLD'S FIRST JUDGMENT DAY

253. *Where and when did the first great judgment of the human race take place, and what was the verdict?*

The first great judgment (trial and sentence) was at the beginning in Eden, when the whole human race, as represented in its head, Adam, stood on trial before God. The result of that trial was the verdict—guilty, disobedient, unworthy of life; and the penalty inflicted was death—"Dying thou shalt die". (Genesis 2:17, margin) And so "in Adam all die". That trial time in Eden was the world's first judgment day, and the decision of the Judge (Jehovah) has ever since been enforced.

254. *What are the evidences that the divine penalty has been enforced?*

"The wrath of God is revealed from heaven against all unrighteousness." It may be seen in every funeral procession. Every tomb is a witness to it. It is felt in every ache and pain we experience, all of which are results of the first trial and sentence—the righteous sentence of God, that we are unworthy of life and the blessings originally provided for man when obedient and in God's likeness.

255. *Nevertheless, what gracious provision has God made for the condemned race?*

But mankind are to be recovered from the sentence of that first trial by the one sacrifice for all, which the great Redeemer has given. All are to be rescued from the grave and from the sentence of death—destruction—which in view of this redemption is no longer to be considered death in the full, everlasting sense of the word, but rather a temporary sleep; because in the Millennial morning all will be awakened by the Life-giver who redeemed all. Only the church of believers in Christ are yet in any sense released or "escaped" from this original sentence and penalty; and their escape is not yet actual, but only so reckoned by faith. "We are saved by hope" only. Our actual release from this death penalty (incurred in Adam and escaped from by getting into Christ) will not be fully experienced until the resurrection morning, when we shall be satisfied to awake in our Redeemer's likeness.

256. *Does the fact that the church alone has "escaped the corruption that is in the world" signify that the rest of mankind will have no future hope of escape?*

But the fact that we who have come to a knowledge of God's gracious plan in Christ "have escaped the corruption that is [still] on the world", so far from proving that others will have no future hope of escape, proves rather the contrary of this; for we are first-fruits unto God of His creatures. Our escape from death in Adam to life in Christ is but a foretaste of the deliverance of whosoever wills to be delivered from the bondage of corruption [death] to the liberty of life proper to all whom God shall recognize as sons. All who will may be delivered from death to life, regardless of the distinctions of nature God has provided for His sons on different planes of being. The gospel age is the trial-day for life or death to those called to the divine nature.

HAS GOD CHANGED HIS MIND THAT ANOTHER JUDGMENT HAS BEEN PROVIDED?

257. *Since the Scriptures declare that He "hath appointed a day" for the world's judgment, does this signify that Jehovah has changed His mind?*

But God has appointed a day, in which He will judge the world. How can this be? Has God changed His mind? Has He concluded that His decision in the trial of the first man and the general sentence were unjust, too severe, that He now concludes to judge the world individually? No; were such the case, we should have no better guarantee of a just decision in the future trial than in the past. It is not that God considers His decision in the first judgment unjust, but that He has provided a redemption from the penalty of the first judgment, in order that He may grant another judgment (trial) under more favorable conditions to the entire race—all having then had experience with sin and its results.

God has not changed one iota from His original purpose, which He formed before the world began. He distinctly informs us that He changes not, and that He will by no means clear the guilty. He will exact the full penalty which He justly pronounced. And that full penalty has been provided by the Redeemer or Substitute, whom God Himself provided—Jesus Christ, who, "by the grace [favor] of God, tasted death for every man". Our Lord having provided a ransom for Adam's race, with His own life, can justly give a new offer of life to them all. This offer to the church is under the Covenant of Sacrifice (Psalm 50:5; Romans 12:1); to the world it will be under the New Covenant.—Romans 14:9; Hebrews 10:16; Jeremiah 31:31.

258. *Who will be the judge at the world's individual trial?*

We are further informed that when God gives the world this individual trial, it will be under Christ as judge, whom Jehovah will thus honor because of His obedience even unto death for our redemption. God has highly exalted Him, even to the divine nature, that He may be a Prince and a Savior (Acts 5:31), that He may be able to recover from death and grant judgment to all whom He purchased with His own precious blood. God has committed all judgment unto the Son, and has given Him all power in heaven and in earth.

259. *What does the character of the judge guarantee for this judgement?*

It is, then, the highly exalted, glorified Christ, who so loved the world as to give His life as its ransom-price, who is to be the judge of the world in its promised future trial. And it is Jehovah Himself who has appointed Him to that office, for that very purpose. Since such are the plain declarations of the Scriptures, there is nothing to dread, but on the contrary there is great cause for rejoicing on the part of all, in looking forward to the judgment day. The character of the Judge is a sufficient guaranty that the judgment will be just and merciful, and with due consideration for the infirmities of all, until the willing and obedient are brought back to the original perfection lost in Eden.

260. *What duties appertained to the office of a judge in Old Testament times, and how will Christ fulfill these in the world's judgment day?*

A judge, in ancient times, was one who executed justice and relieved the oppressed. Note, for instance, how, when under oppression by their enemies because of transgression against the Lord, Israel was time and again released and blessed by the raising up of judges. Thus we read, "When the children of Israel cried unto Jehovah, Jehovah raised up a deliverer, . . . Othniel. And the spirit of Jehovah came upon him, and he judged Israel, and went out to war, and prevailed, and the land had rest forty years." (Judges 3:9-11) So, though the world has long been under the power and oppression of the adversary, Satan, yet shortly He who pays for the sins of all with His own precious blood will take His great power and reign. He will deliver and judge those whom He so loved as to redeem.

With this conclusion all the prophetic declarations agree. It is written: "With righteousness shall he judge the world, and the people with equity".—Psalm 98:9.

THE COMING JUDGMENT MORE FAVORABLE THAN THE FIRST

261. *Upon what principles will the coming judgment be conducted? Why will the second trial be more favorable for mankind than the first? When the world has reached perfection, what will be required of all men?*

This coming judgment will be on exactly the same principles as the first. The same law of obedience will be presented, with the same re-

ward of life, and the same penalty of death. And as the first trial had a beginning, progressed, and culminated with a sentence, so also will the second; and the sentence will be life to the righteous and death to the unrighteous. The second trial will be more favorable than the first, because of the experience gained under the results of the first trial. Unlike the first trial, the second trial will be one in which every man will stand the test for himself alone, and not for another. None will then die because of Adam's sin, or because of inherited imperfections. It shall no more be said, "The fathers have eaten a sour grape and the children's teeth are set on edge; but he that eateth the sour grape, his teeth shall be set on edge". "The soul that sinneth, it shall die."—Ezekiel 18:4; Jeremiah 31:29, 30.

And it will be true of the world then, as it is of the church now, that a man will not be judged according to that which he hath not, but according to that which he hath. (2 Corinthians 8:12) Under the reign of Christ, mankind will be gradually educated, trained and disciplined until they reach perfection. And when they have reached perfection, perfect harmony with God will be required, and any who then fall short of perfect obedience will be cut off, being judged unworthy of life. The sin which brought death to the race through Adam was simply one disobedient act; but by that act he fell from his perfection. God had a right to demand perfect obedience of him, since he was created perfect; and He will demand the same of all men when the great work of restoring them is complete. None will be permitted to have everlasting life who then in the slightest degree fall short of perfection. To fall short of perfection, then, will be to sin willfully against full light and perfect ability.

NO RELEASE FROM THE SECOND DEATH

262. *What will be the experience of willful sinners? And how many years of trial are guaranteed to each individual?*

Any who sin willfully, against full light and ability, will perish in the second death. And should any one, during that age of trial, under its full blaze of light, spurn the offered favors, and make no progress toward perfection for a

hundred years, he will be reckoned unworthy of life and will be "cut off", though at a hundred years he would be in the period of comparative childhood. Thus it is written of that day: "As a lad shall one die a hundred years old; and as a sinner shall be accursed he who dieth at a hundred years old". (Isaiah 65:20—Leeser) Thus all must have at least one hundred years of trial; and, if not so obstinate as to refuse to make progress, their trial will continue throughout the entire day of Christ, reaching a culmination only at its close.

263. *What parable of our Lord's and what other Scriptures describe the conclusion of the world's judgment day?*

The conclusion of the world's coming judgment is clearly shown in the parable of the sheep and the goats, Matthew 25:31-46; in Revelation 20:15; 21:8 and in 1 Corinthians 15:25. These and other scriptures show that at its close the two classes will have been completely separated—the obedient and the disobedient; those in harmony with the letter and the spirit of God's law, and those out of harmony with it. They enter into everlasting life, and the others are remanded to death, extinction ("second death"), the same sentence as in the first judgment, from which they had been released by Christ, who secured the right to release them by the giving of their ransom—by His death. This will be their second death. No ransom will be given for them; and there will be no release or resurrection for them, their sin being a willful individual sin against full light and opportunity, under a most favorable, individual trial.

264. *How does the coming trial affect each individual's present responsibility?*

We do not wish to be understood as ignoring the present responsibility of the world, which every man has, according to the measure of light enjoyed, whether it be much or little, whether it be the light of nature or of revelation. "The eyes of the Lord are in every place, beholding the evil and the good," and "God shall bring every work into judgment, with every secret thing, whether it be good or whether it be evil". (Proverbs 15:3; Ecclesiastes 12:14) The good and the evil deeds of the present time will receive a just recompense of reward either now or hereafter. "Some men's sins are open be-

forehand, going before to judgment, and some they follow after." (1 Timothy 5:24) No others than the Lord's favored "little flock" have as yet sufficient light to incur the final penalty, the second death. We here merely broach the subject of the world's present accountability, leaving particulars for subsequent consideration.

BETWEEN THESE JUDGMENT PERIODS GOD HAS BEEN SELECTING THE FUTURE JUDGES

265. *How long a period intervenes between the first and second judgment days? And what has been the object of this interval?*

A period of about six thousand years intervenes between the world's first and second judgment days, and during this long period God has been selecting two special classes from among men, and specially trying, disciplining and training them to be His honored instruments during the period or day of the world's judgment.

266. *How are these two classes respectively designated by St. Paul? And will they come into judgment with the world?*

These two classes are respectively designated by Paul (Hebrews 3:5,6) as the house of Sons and the house of Servants, the former being composed of those overcomers tried and found faithful during the Christian dispensation, and the latter being composed of the faithful overcomers who preceded the Christian dispensation. Those special selections in no sense interfere with the judgment or trial promised to the world. Those who successfully pass the trial for either of these special classes will not come into judgment with the world, but will enter upon their reward when the world is coming into judgment. They will be God's agents in the blessing of the world—in giving to men the instruction and training necessary for their final testing and judgment. "Do ye not know that the saints shall judge the world?"—1 Corinthians 6:2.

267. *What was necessary before the members of these two classes could be placed on trial?*

These specially selected classes, like the rest of mankind, were once under the Adamic condemnation, but became sharers by faith in the benefits of Christ's death. After being first justified by faith in God's promises, and having

then fulfilled the subsequent conditions of their respective callings, they are accounted worthy of high exaltation to stations of honor and authority.

268. *Contrast the judgments of these special classes with the world's trial.*

The trial or judgment of both these classes has been much more severe than the trial of the world will be in its judgment day; because these have had to withstand Satan, the prince of this world, with all his wiles and ensnarements, while in the world's judgment day Christ will be reigning, and Satan will be bound, that he may not deceive the nations. (Revelation 20:3) These have suffered persecution for righteousness' sake, while then men will be rewarded for righteousness, and punished only for unrighteousness. These have had great stumbling blocks and snares in the way, which will be removed when the world is placed on trial. But though the trial of these two special companies has been much more severe than the trial of the world will be, the rewards are correspondingly greater.

"LET ALL REJOICE, BECAUSE HE COMETH TO JUDGE THE EARTH"

269. *How and by whom have the world and the nominal church been deceived respecting the true character of the future judgment day?*

Under the sophistries of the great deceiver, Satan, both the world and the church nominal have been robbed of the blessed assurances of the coming time of righteous judgment. They know that the Bible tells of a coming judgment day, but they regard it with only fear and dread; and because of this fear, there are to them no more unwelcome tidings than that the day of the Lord is at hand. They put it far away from them, and do not wish to hear it even mentioned. They have no idea of the blessings in store for the world under that glorious reign of Him whom God hath appointed to judge the world in righteousness. Among the greatest of the blinding influences which Satan has devised to keep men in ignorance of the truth regarding the judgment day have been the errors which have crept into the creeds and hymn-books of the various sects. Many have come to esteem these errors as of paramount importance to the Word of God.

JUVENILE BIBLE STUDY

One question for each day is provided by this journal. The parent will find it interesting and helpful to have the child take up the question each day and to aid it in finding the answer in the Scriptures, thus developing a knowledge of the Bible and learning where to find in it the information which is desired. Questions by J. L. Hoagland.

1. How many "ways" or roads are mentioned in Matthew 7:13, 14?

Ans.: Two; "the broad way" and "the narrow way".

2. To what does "the broad way" lead?

Ans.: It leads "to destruction"—death—the Adamite death.

3. Have many entered "the broad way to destruction"?

Ans.: Yes. "Many there be which go in thereat." See Verse 13.

4. Who was the first one to enter "the broad way to destruction"?

Ans.: Adam.

5. How long did it take him to reach the end—destruction—death?

Ans.: It took him nearly 930 years. See Genesis 5:5.

6. How many were born on "the broad way to destruction"?

Ans.: The whole human family. See Rom. 5:12-14.

7. How long was it before any other way or road was opened up?

Ans.: Not until the first advent of Christ—after more than 4,000 years—was another way opened up. See Hebrews 10:20; 2 Timothy 1:10.

8. Why did St. Paul, in Hebrews 10:20, call it "a new way"?

Ans.: He called it a new way because there had been no such way open before.

9. Why did he call it "a living way"?

Ans.: Because, instead of leading to destruction—death—it leads to eternal life on the highest plane possible, even the divine nature—immortality.

10. Who was the first one to enter "the narrow way to life" (Matthew 7:14)?

Ans.: Jesus entered the narrow way at Jordan when, at the age of thirty years, He there consecrated to God

all that He was and all that He had or could hope to have as a perfect human being. See Hebrews 10:7.

11. How long was He in the narrow way?

Ans.: Three and one half years—from Jordan to the cross.

12. Did He obtain the prize at the end of the narrow way?

Ans.: He did. "For as the Father hath life in himself; so hath he given to the Son to have life in himself." (John 5:26) Jesus Christ, since His resurrection, "hath life in himself". That is to say, He is the very fountain of life; He is now immortal; He cannot die again. See Revelation 1:18: "I am he that liveth and was dead; and behold I am alive for evermore".

13. Have any others, since Jesus started, walked in the narrow way of self-sacrifice—in the footsteps of Jesus?

Ans.: Yes. The 144,000 "which follow the Lamb [Jesus] whithersoever he goeth".—Revelation 14:1-4.

14. Why is the entrance to this way called "strait" and the way "narrow"?

Ans.: "Strait" is from the Greek word *stenos*, which means difficult or narrow; and accordingly we read (Luke 9:23): "If any man will come after me [follow in my footsteps], let him deny himself [cast away all earthly hopes, ambitions and selfish desires] and take up his cross daily and follow me". Even after he has entered "the narrow way" through the "strait gate", he must continue "daily" to "take up his cross" [voluntarily face the ignominy of being His disciple] and follow Jesus in the narrow way of self-sacrifice. Again, Jesus said: "If any man come to me and hate not [love not less] his father, and mother, and wife and children, and brethren and sisters, yea, and his own life also, he cannot be my disciple". (Luke 14:26). Is it any wonder that "few there be that find" "the strait gate" or entrance to the "narrow way"?—Matthew 7:14.

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