

A NEW SCIENCE AND ITS FINDINGS

Some Disconcerting Discoveries of Karl Pearson

BY ALBERT JAY NOCK

ILLUSTRATED WITH PORTRAITS

"AND don't fail to see Karl Pearson,—his Eugenics Laboratory is doing great work."

This was the last word of advice given me in Washington by Dr. Smith of the Department of Agriculture, before I started for Europe.

So I saw Professor Pearson, after much difficulty and in an inopportune time. For a man who does not wish to be seen, however, any time is inopportune; and Professor Pearson did not wish to be seen. *Les Anglais sont justes mais pas bons*,—the witty French traveler scored a bull's-eye in universal truth; and, in particular, your thoroughbred English man of science despises the ignorant meddling of newspapermen. But Professor Pearson received me and, being *juste*, answered all my questions and took me over the Galton Laboratory of National Eugenics.

It was not much of a "take," the more's the pity. Two or three second-story rooms in the University of London in Gower Street—small, poorly lighted, and cluttered like a junk-shop. The necessary paraphernalia of the science—records, charts, books, crania, biometrical apparatus—overflowed in heaps. One wonders how a nation can be so ungrateful to its proved benefactors as to permit Professor Pearson to go on working under such discouraging and retarding conditions.

For, having had a reporter's glimpse at about all the latest European developments in science, from aeronautics, wireless, and preventive medicine to psychical research, the latest thing in hydraulic jacks and the most improved automatic street-sweeper, I assert my belief that the most important and

urgently necessary line of scientific work on earth to-day is being pursued in those wretchedly inadequate quarters in Gower Street. I believe that the greatest public service performed to-day by any man of science anywhere is being performed by Professor Karl Pearson.

I propose to show cause for this opinion presently, as soon as I have said a word about the science itself.

Eugenics is not taken seriously by most of us because it is so little understood,—so actively misapprehended, I should say. Before I saw it at work, I confess that I had passed it by without examination, as a fad; probably many others have done likewise. We are, perhaps, not to be blamed. The multitude of things pressing for one's attention is very great, and the selective process must let some good go with the bad. But the report of a novelty ought to carry at least some *prima facie* evidence of its seriousness and value; and the sensational reports of Eugenics that I had read, with their talk about "the right of the child to be well-born," conveyed to me the impression of some kind of fanciful scheme for breeding human beings by prescription. Hence I looked no further. I hope my fellow-readers were more fortunate; but I am quite sure that most of them were not.

Eugenics is a branch of biology, organized as a science by the late Sir Francis Galton, who gave his name and the bulk of his private fortune to the Laboratory in Gower Street—the only institution of its kind as yet existing on a national scale. Eugenics is primarily an analysis of the agencies under social control that can favor-

ably or unfavorably affect the physical or mental condition of posterity. It gathers and coördinates statistics of all the influences that society brings to bear upon our descendants through us. Special work of this kind has, of course, been done in several directions. Lombroso and the "Italianschool" made very close statistical researches into the prison population, and similar investigations have been made on various classes of defectives. But Eugenics deals with the normal as well as the abnormal type. It handles the biometrical statistics of families, schools, colleges, fraternal organizations, as well as those of the asylums, hospitals and penitentiaries, in order to determine and measure the socially controlled agencies that are in force.

The posterity-affecting agencies under social control are very numerous, and the scope of the science is therefore very great. Not only does it include the familiar environmental agencies like food, drink, housing, sanitation, occupations, but also the far more subtle factors of heredity that are brought out by a study of censuses, school-reports, Board of Health returns, and the like; tracing out inherited habits, aptitudes, abilities and physical characteristics, as they manifest themselves alike in the normal and abnormal subjects of investigation.

Now, to justify my high opinion of this science—and to point a needed moral—I am going to put before you a surprising story.

Of all the agencies under social control, the one most completely and obviously under the control of society is the law. Society can make, amend, suspend, or abolish its laws at pleasure. We determine our environmental conditions largely by law. In fact, familiarity with the absolute law-making power of society makes some of us unconsciously assume that statutory law is above everything—that even the laws of Nature have to vacate when the Legislature passes a statute. A brilliant writer with a turn for epigram once mentioned to me four classes among us who seemed peculiarly liable to this delusion—the impossibilist Socialists, evangelical preachers, Prohibitionists and policemen. However witty this saying will appear, or however unscrupulous, will depend, probably, upon our own relation to the philosophy of the four classes, or any one of them. I quote it merely to show a patent extreme of our faith in the unlimited potential control of all things by statutory law, and in the absolute control by society of the law-making power.

Very well, then, here is an interesting and profitable study of the basis of our faith, and

at the same time a most illuminating example of the value of the science of Eugenics. I urge it upon the attention of every reader, and, above all, upon the publicists, legislators, and social workers of the United States; because timely attention to it will save us the repetition of certain vital, and I fear irreparable, blunders that England has made; blunders that England made, moreover, by what anyone would say was the most enlightened, most humane, and most beneficent policy in her history of legislation.

Two things have been worrying England acutely for several years. First, her birth rate is low and steadily declining. She is raising the specter of race suicide. Some statisticians say that in fifteen years, at the present rate of decline, her native population will be stationary, and she must depend on immigration to keep going.

Second, her population has not the same good physical and mental quality it used to have. The South African war made some disagreeable and shocking revelations of the impairment of the fighting stock. Percentages of lunacy, degeneration, etc., seem to show an increased deterioration in the quality as well as quantity of dependable English nerve, brain, and muscle.

We will consider separately the birth rate of three representative sections of England, as follows:

I. The birth rate of Bradford, Manchester, Bolton, and Leeds. These are typical industrial towns, manufacturing centers like Lowell and Fall River. Bradford manufactures woollens, and formerly employed great numbers of women and children in the factories. The other cities are largely in textile manufacturing, and employed great quantities of female labor and child labor.

The birth-rate line of all these towns exhibits the same characteristic. It begins to fall about 1877 and declines continuously and sharply to the present time. In 1852 the wives of Bradford bore a child once in four years; now they bear a child once in ten years. The number of births per family has fallen off about one-half. Allowing a 30 per cent. child-mortality, the native population of Bradford is practically stationary at the present time.

The most unreflecting glance at the birth-rate line of Bradford, Leeds, Manchester, and Bolton, would suggest the query, *Something must have happened in England about 1877 to affect the birth rate of factory towns,—what was it?*

II. The birth rate of Cornwall, an agri-

cultural, mining, and fishing district,—largely mining. Here we see a very sharp drop in the birth rate in 1867, another about 1887, and then a rapid decline.

Again the query, *What happened about 1867 and 1887 to affect the birth rate of the mining district of Cornwall?*

III. The birth rate of York, which is chiefly a county town and trading center, with no great manufacturing interests. Here the drop begins in 1887 and the decline continues.

Once more, *Why in 1887—what happened then?*

Now let us look for an answer to these questions. We can take it as an axiom that nothing ever “happens”—happens by blind chance, that is. Something must have taken place in those years to affect the birth rate—in 1867 and 1887 for the mining districts, 1877 for the industrial towns, and 1887 again for the county towns and trading centers like York, which keep shop for a large outlying section.

Furthermore, whatever took place at these times must be something that has remained in force, because the birth rate has never “come back.” There is no mere wave of fluctuation. The depressing influence, whatever it was, was something continuous and cumulative. Now, what was it?

Only one social phenomenon in England

stands out to meet the conditions imposed by our question,—*the laws against child-labor.*

This is what happened, the only thing that did happen in England at those periods, which could conceivably affect the birth rate.

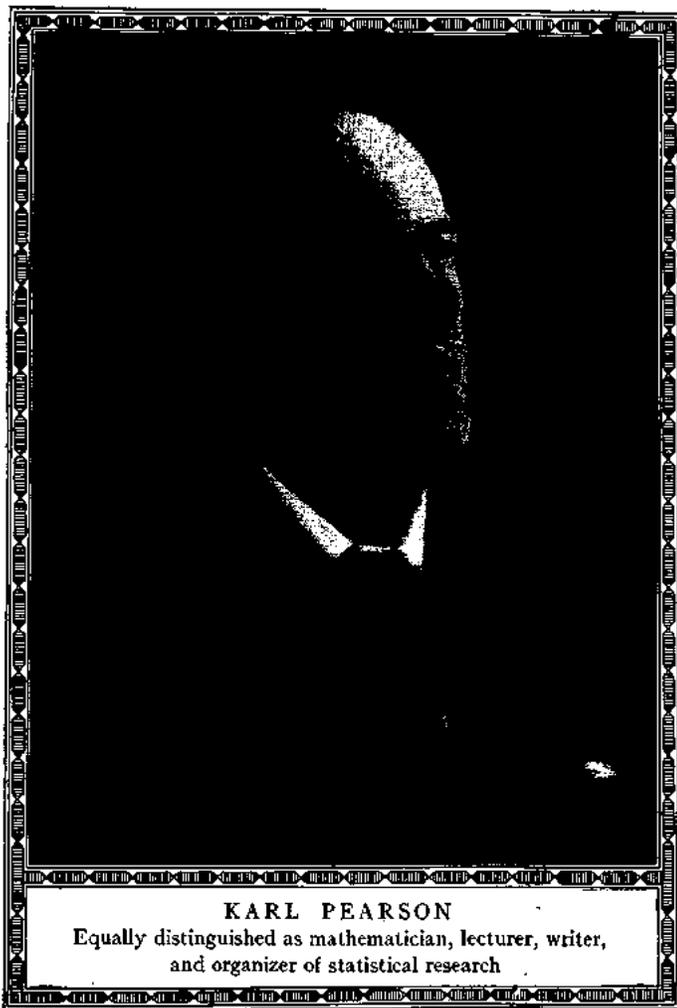
Let us look closer: From 1864 to 1867 we see a series of Acts of Parliament applying, among other things, to the iron, steel, and

copper industries, culminating in the Workshop Regulation Act of 1867, forbidding the employment of children under eight, and from eight to thirteen, except as “half-timers.” Readers may go back to Mrs. Burnett’s earlier stories for the economic circumstances of this Act. This group of Acts was passed between 1864 and 1867: and in 1867, down went the birth rate in the mining districts of Cornwall.

In 1877 we have the Compulsory Education

Act, and in 1878 an Act, too complex to be described here, raising the age of child-employment and in various ways throwing especially discouraging responsibility on the employer of child-labor. Down went the birth rate in the factory towns, like Bradford, Bolton, and Leeds.

In 1887 we have the Mines Act, which applied to child-labor on minerals, fire-clay, pottery-clay, etc., as well as iron and coal. The Act applied to labor in the above-ground preparation of these minerals for use, as well



KARL PEARSON
Equally distinguished as mathematician, lecturer, writer,
and organizer of statistical research

as to the actual mining. Sensitively and obediently, the birth rate of the mining region of Cornwall dropped again, and so did that of the trading towns and county centers like York.

After these, we find the Education Act of 1890 forbidding the employment of children under twelve in any way to interfere with full attendance at school. We find a Factory Act in 1891, again raising the age of child-employment, and restricting the employment of women after child-birth. *And the whole birth rate of England responded with a brisk decline.*

Let us consider this matter without sentiment. Let us survey the women and children involved in this situation as calmly as though they were pawns on a chessboard, in the effort to get a purely economic and social estimate of the effect of these Acts of Parliament.

Here is the net result. In England, at the present time, a child-bearing woman is economically non-productive. So is a child under twelve years of age. A child under sixteen has his economic productivity stringently restricted.

But so it ought to be, you say. Of course,—all these things are right, quite right. Yet at the same time it must be clear that the people whose children used to be an *economic asset*—used to contribute to the support of the family by the time they were six or eight years old—are not going to have any children if they can help it now that the economic value of their children is taken away.

I can imagine the pain and shock that a reader will experience at hearing children spoken of as an economic asset, as *goods*, brought into the world on account of their economic value to the family, kept out of it when that value is decreased or destroyed. I sympathize with the sense of outrage that the reader feels; I feel it myself, feel it keenly. But what are we to do—hide our heads in the sand? The thing simply *is so*. You may not like it, I do not; but the fact is that to a very large part of the working population of the world a child is *goods*. With these, therefore, the production of children is roughly subject to the law of supply and demand. When Parliament or Congress or a State Legislature diminishes the earning power of children—takes away their economic value, in part or in whole, by a child-labor law,—the supply of children diminishes at once. It is not only true of England but true of the United States; not only true of Bradford and Bolton, but true of Brockton and Braddock—true the world over. *Every child-labor law that puts an economic penalty on parentage—*

and every English law, and, as far as I am aware, every one of our child-labor laws as well, is so constructed—*reduces the birth rate*. And in England, the cumulative effect of the whole series of such laws has gone so far as to threaten the self-perpetuating power of England's population.

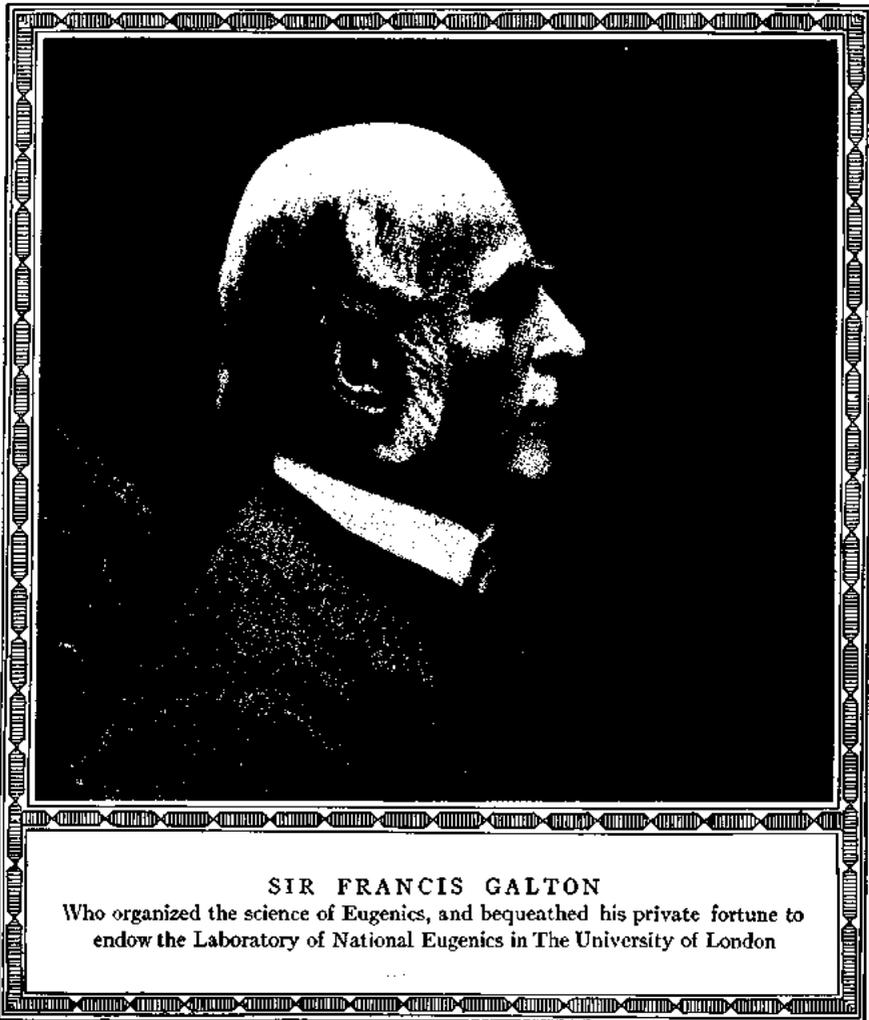
But now some one with a philosophical turn will say, Very well, it is a first-rate thing to have this salutary check put upon the indiscriminate reproduction of poor children. Poor people ought not to have any more children than they can afford to keep; and if the average Bradford family has been cut down from seven children to four or three, so much the better for Bradford and for England. If we can restrain our poor working people from raising large families, from being still further impoverished by the cost of large batches of dependent children, so much the better for us.

Just so. Matthew Arnold said this forty years ago, and I, for one, accepted it from him without question. It was his solution of the problem of the reeking misery of the East End of London. He said that it was necessary to teach the poor that for a man to have more children than he could afford to keep, not too precariously, was as culpable an extravagance as having a larger house, more horses and carriages, or more or better furniture and pictures than he could afford to pay for.

Well, the Education and Factory Acts have certainly taught this lesson. If Mr. Arnold were alive, he could see his counsel at work, and nearly everyone agreeing with him. No doubt, too, that from a strictly family standpoint, he was largely right; but from the social point of view, from the standpoint of the state, he was far wrong.

For this new statistical science of Eugenics immediately puts before us the effect of a strange natural law of primogeniture. It shows that the physical and mental condition of early members of a family—first-born and second-born—is sharply differentiated from that of later members. Where, for example, tuberculosis, insanity, criminality, albinism are found in a family, they are found to predominate tremendously in the first- and second-born over those born later.

The distribution of these disorders among the children of a family would be expected to be tolerably uniform. But, in fact, observation shows nearly twice as many cases of tuberculosis in the first-born of tuberculous families as the mathematical probability would lead us to expect. The actual observed frequency being represented by 112, the expected frequency is about .66. In the



SIR FRANCIS GALTON

Who organized the science of Eugenics, and bequeathed his private fortune to endow the Laboratory of National Eugenics in The University of London

second born, the figures stand: expected frequency, 64; actual observed frequency, 80. When we get to the third-born child, however, the relation is reversed. The expectation is 58, and the actual frequency only 40;—and all the way down the order of birth, from this point, the expected frequency is continually in excess of the observed frequency. In criminality and albinism, expected frequency is in excess of observed frequency after the second-born; but in the first-born, actual observed criminality stands at 120 as against an expectation of 56.

These records are startling. They show the great liability of the first- and second-born to the weight of a heavy social handicap, and the corresponding chance for the later-born to be exempted into normality. But the results of this law, taken in connection with an artificially reduced birth rate, are remark-

able. Clearly, if you cut off the later members of the family,—if you have two children instead of seven to a family—you are cutting into the exempt class, reducing the relative proportion of sound stock in the community, and greatly increasing the relative proportion of the tuberculous, insane, criminal, and albionotic.

The Galton Laboratory has published statistics showing that this is precisely what has taken place. Observed lunacy in Scotland has risen from 2.2 per 1,000 in 1871 to 3.5 in 1897; infant imbecility has risen from .4 in 1873 to .7 in 1895; and the proportion of pauper lunatics to total paupers from .9 in 1872 to 2.0 in 1895.

Nor is this quite all. The Laboratory also considers the relative fertility of normal and pathological stock. It has published a table showing that in a given number of families

of each kind, those of diseased stock contain about 20 per cent. more children than those of normal stock. Any gardener would thank his stars if he could make his vegetables keep up with the weeds; and in human reproduction, too, apparently the diseased, insane, and degenerate stocks contribute more to the population, relatively, than the normal.

This, then, in brief, is the history of England's difficulty with her birth rate, the reason of the deterioration of her stock. Obviously, too, it shows a state of things that will go straight from bad to worse unless the unmodified economic evil of her child-labor laws is somehow corrected.

Because *they penalize parentage, just as ours do*. I am not writing this article primarily to tell you England's troubles. I want to show how it will pay us to take heed to these statistical discoveries about the economic bearing of the Factory Acts. Child-labor is a question that is beginning to press upon us. We are framing laws to regulate it or abolish it. Well and good; so we ought. But let us not repeat the mistake of the English laws, as we are doing. Let us shape our treatment of the matter in such a way as to *avoid putting an economic penalty on parentage*. For otherwise we may be sure that in the long run we will confront consequences as serious as those which menace England now.

The printed page lies open, unresisting to any kind of criticism, just or unjust, that one may choose to put upon it. But I humbly hope no one will say, "Aha, he wants to drive the children back into the mines and mills, the child-bearing woman to the looms." I do not. I would not put a single scientific shot in the locker of the pitiful wretches who lobby against child-labor laws at Washington and elsewhere. Nor would I supply a pennyworth of moral support to their masters, those infinitely more pitiful and pitiable persons, the mill-owners and manufacturers who find it in their hearts to exploit child-labor for the sake of a dollar or two. But I wish to point out how clearly the foregoing exhibit of Eugenics shows the evil that arises when one class of men undertakes—even in the fullness of sincerity and pity—to legislate for another class, about whom they know really very little.

Lord Shaftesbury was a good and great man, a humane man, and one who worked tirelessly for the good of the oppressed working class. But, foremost and typical of those who stood behind the Factory Acts, he belonged, like my readers and myself, to the lawmaking class. And he was blind to the

economic consequences of the Factory Acts because, *to the lawmaking class children are not goods*.

No, our children, if we have any, are a luxury. We expect to keep them and pay for them. It does not occur to us, any more than it occurred to Shaftesbury or Sir James Graham, to think of children—*anybody's* children—in any other way. We do not bring our children into the world because their labor is a marketable asset; so we do not enter into the consciousness of a large class of persons who will have children if having them can be made to pay, and if not, then not.

But the class exists and exists in large numbers. Their instinct of parentage is as powerful and respectable as anyone's, but it is perforce regulated by the paramount control of poverty—the bitter poverty that forces them to market every available resource they have. Ours is not so regulated. We may be poor, but at least we can keep the infancy of our children in view as a luxury—to be paid for sometimes, it may be, scantily and hardly, but somehow to be paid for and enjoyed.

There are many men and women, however, who can not do this, though they would like to do it quite as well as we. It is by no means of free choice that the poor mother sends her child into the pit-mouth of Cornwall or Pennsylvania, or into the factories of Leeds or Lowell. She sends it there under the tireless, compelling urgency of poverty, a poverty of which our lawmaking class knows nothing, a poverty against which no sentiment or sensibility can endure.

It is for this class that we presume to legislate when we contemplate laws against child-labor. We see the children at work in the factory, we see the mother near her time of childbirth tending a loom—our humanity is outraged, our pity touched, we shudder, agitate, legislate, and drive them out.

What then? Nothing; we are through. We think we have settled the question of child-labor when we have stopped child-labor. But we have not touched the economic side of the matter at all; perhaps it has not occurred to us to think that the matter has an economic side,—one, at all events, that takes issue in such grave and far-reaching consequences as to affect the national life and character of a whole people. But what we have done, in the social and economic view, is to penalize parentage by destroying the economic value of the child. We have contributed no economic assistance to the upkeep of those families, in lieu of the productive power that we have paralyzed. We have handicapped

the parent in his competition with the childless; and the law of supply and demand attends to the rest. The family of seven or eight is supplanted by that of two or three, the strange law of primogeniture governing inherited disabilities comes in, and our population is physically, mentally, and morally impaired.

Eugenics poses the problem of child-labor thus,—to abolish the evil and inhumanity inherent in child-labor without at the same time bringing a greater evil on the state by penalizing parentage in general and good parentage, *fit* parentage, in particular.

But how can this be done? Well, that is for the lawmakers to say. Eugenics does not seek to invade the province of the Legislature. Eugenics makes suggestions and offers criticisms,—a most severe criticism, for instance, of the new plan of old-age pensions, because clearly the time when the poor parent most needs help is at the other end of his life, when his children are young and dependent. Eugenics suggests the endowment of parentage, especially *fit* parentage, as an offset against destroying the child's economic value. This might be effected in several ways: by differential wages, perhaps by a scheme of national insurance with provisions—a kind of bounty—for motherhood and for each child as it comes along. Best of all, probably, it might be effected by the State's power of applying differential taxation.

But Eugenics is generally content merely to put before the legislators what they have never had put before them,—information about the biological side of their immense human problem. Eugenics makes it possible for them to eliminate error, to avoid collision with the immutable laws of Nature, and then lets them express their knowledge as best they can. Eugenics tries to get the ear of the social reformer and the publicist and warn them that their philanthropic efforts may only penalize parentage, lower the birth rate, promote the reproduction of inferior beings, promote race degeneracy and, finally, race suicide.

Let me make a plea for the organization of Eugenics in this country. I have given only one little specimen of what it is able to do for our guidance and welfare, and does it not look useful? Let us divert, if necessary, a little

of the endowment that now goes so prodigally into the multiplication of electricians, lawyers, dentists, engineers, and doctors, and endow an investigation into the workings of cause and effect upon our supply of *men*.

England is showing herself inconceivably dull about this matter. Sir W. Ramsay told me that the University was appealing publicly for \$75,000 for an appropriate laboratory building, but that it might be slow work to raise it. Professor Pearson, too, was gently pessimistic about the chance of getting that amount, which seemed to me—accustomed to our liberal private endowments of scientific research—extremely small.

But if England does not know a good thing when she sees it, all the better for us to show that we do. Every school, college, jail, factory, and asylum in the United States is just so much material for a Eugenics laboratory. The amount of money necessary to organize the science is very moderate. Then all that remains is to send over a couple of our best statisticians to be trained by Professor Pearson, and let them go to work.

When we inflate ourselves with patriotic pride, it is a precious comfortable thing to be certain that we "have the goods." England's present experience, her searchings of heart, her sense of the pressure brought to bear on many of her social theories and institutions—all this is instructive. England has always had her fair share of national pride, but "Rule Britannia" seems to be slipping down into a minor key just now, in spite of all Mr. Asquith and Mr. Lloyd-George can do. The science of Eugenics is on hand with a cogent reason,—too late.

England's mournful lesson is that you can not have national greatness bottomed on unsound men and women. Maybe our men and women are sound to the core. Maybe they are capable of producing sound descendants to the fortieth generation. Maybe the social agencies operating under our control are beyond improvement,—I do not intend to go beyond the limits of this article in discussing them. But with England's experience before us, there is nothing like certainty, nothing like precaution. Therefore, having seen a sample of what this science can do, let us import it and put it at work counting us up—while it is not too late.

Is It True?

Startling and Convincing Results of Karl Pearson's Investigation of the Families of Drunkards and Teetotalers

By Albert Jay Nock
Author of "The New Science and Its Findings"
Illustrations by M. L. Blumenthal

I HAD always been taught that drunken parents are apt to produce imperfect children. School physiologists say so (at least they did in my time); more pretentious treatises said so; physicians and lecturers said so. It was part of the general current belief about the curse of alcohol that was accepted without question as an established fact.

For my own part, I never had any doubt about it until I visited the Galton Laboratory for Eugenics, at the University of London. There I saw statistics which convinced me that the question ought to be reexamined.

Please note carefully that I say no more, and the purpose of this article is to show no more, than that the question ought to be reopened and reexamined. I am not printing Professor Pearson's statistics or conclusions as final. It would be a serious injustice to him if I did. They

Here let me post a sign-board pointing to the maelstrom of error that has sucked in many a statistician—the practice of taking association for causation. Thousands of

consumptive parents have consumptive children; therefore, until the germ was caught and detected and the whole theory



purport to show only that the investigations of the Galton Laboratory, as far as they go, throw such serious doubt upon the accepted belief that alcoholic parents are apt to produce imperfect children that we ought to suspend judgment and call in further evidence.

I will sum up these investigations briefly, and then at the end of this article I will show why the matter is of great importance to those (of whom I am one) who are all for a sound and scientific temperance reform.

First, a word about method. Clearly the only method to use in settling a question of this kind is the method of statistics after the fact. It is one thing to say confidently from analysis before the fact that such-and-such a thing ought to happen and must happen. This is the "high priori-road" that many scientific men have traveled to great and useful purpose. But it is quite another thing to count up the accomplished facts and see whether or not the thing really has happened. This is the statistical method upon which the Galton Laboratory places its sole dependence. It comes out as near certainty as anything can in this highly uncertain world. While the study of alcoholism may and does lead us to the belief that drunken parents ought to produce, or must produce, a large percentage of defectives, the only way to turn this belief into a certainty is to count up the children and see whether they really are defective.



of the disease revised, we all firmly believed that consumption was inherited. Or again, when we see a man who drinks and is poor, we infer that he is poor because he drinks. He may be; but again, he may drink because he is poor. Miss

Willard said it was as often true one way as the other, and Tom L. Johnson agreed with her. Then there is a third distinct possibility. He may be poor because he is inefficient; and his inefficiency and drunkenness alike may be collateral results from defective stock. Not an inebriate stock, by any means—there may not have been a case of alcoholism in it for seven generations—but a defective stock of which drunkenness is merely one symptom, along with epilepsy, imbecility, albinism, and a host of others, and in which any symptom may appear in any individual member. Let me try one more illustration which

comes even closer to the point of this article. Suppose you examine a thousand families of drunken parents. You find, say, seven per cent. of defectives. You conclude that the children are defective because the parents drank. But presently I come along reporting just as high a percentage of defectives in another thousand families, taken at random, whose parents never drank a drop. You see the point. The statistics of your thousand families are not collated with those of the non-alcoholic families. In other words, you are assaying a picked sample of humanity, not a random or average sample. This is like Lombroso's famous "find" of the criminal marks or stigmata—bat-ear, flathead, prognathism, etc. Lombroso and his disciples kept finding these marks on hundreds of



"Bad living conditions tend to drive out children, as do drunken parents"

criminals, so presently regarded them as evidences of criminal character, and drew up elaborate theories from them. Now, the only trouble with this was that they never examined anybody *but* criminals. Professor Pearson told me that he found these marks on just as many other people as on criminals. I myself remember two clergymen, brothers, who carried more of these marks than any two men I ever saw. Judged by Lombroso's standards, you would be sure they had not been twenty-four hours out of the penitentiary—and yet they were the very best of men. There was a taint in the stock, undoubtedly; but it seemed to mark the appearance of the two brothers and skip their characters.

Statistics, therefore, of the kind that is usually offered us—so many offspring of drunken parents diseased, so many stunted, so many imbecile, so many criminal—are useful only to exhibit a state of things that we are very sorry for. For showing us the effect of parental drinking on offspring they are useless—worse than useless: they are mischievous, because they are misleading. They appear to show facts of importance about the great national problem of drink; in reality, they do nothing of the kind. They give countenance to specious theories, and by sustaining superficial and unsound reforms they retard and disable any reform that is proposed on a permanent and scientific basis. The only way to give such statistics any soundness is by collating them with statistics of families of non-alcoholic parents. Thus you get results from an average sample of humanity instead of a picked sample.

The Galton Laboratory has tried to find out the effect of parental drinking on children by strict inheritance in physique or mentality. The first question was, obviously, Is there any effect at all, any substantial correlation between drinking or drunkenness in the parent and defectiveness in the child? For if there is any such effect, then only it is worth while to go on and make a closer analysis of its cause. There is no point to any such analysis until you have settled the fact of there being anything to analyze.

For this purpose the Laboratory took reports of school-children in various cities of Great Britain. I saw the completed reports from Edinburgh and Manchester, and the returns from Glasgow were largely in. The children were taken wholly at random—taken in the block, one might say, and averaged. Their mass amounted to a liberal random sample of average children of the United Kingdom, representing all classes. They were ranged in reference to but one thing—the ascertained drinking-habits of their parents. If one or both parents drank, whether moderately or by sprees or in excess, or if neither drank, the fact was noted and the data of the children entered accordingly.

Then the Laboratory took this large collec-



tive sample of English childhood, and set to work to determine the correlation between parental drinking and the following facts:

1. The children's height and weight.
2. Their health.
3. Their intelligence.
4. The character of their diseases.
5. Their eyesight.
6. Their death-rate.

First, putting all ages together, they found that the average height of the children whose parents drank was 47.9 inches, and of non-drinking parents 47.5 inches. The average weight of the former was 55.0 lbs. and of the latter 53.8 lbs.

But the children whose parents drank averaged 9.8 years old, while the children of sober parents averaged 9.4 years.* Making allowance for this correction by strict mathematical means, the conclusion was that the drinking of parents had no appreciable effect upon the height or weight of their children. The old maxim of intimate household hygiene, *Drinking stunts one's children*, was shown to be devoid of foundation as far as the material of this investigation was concerned.

*The drinking habit is apt to increase with age; and as parents grow older, children grow older.

"Closing the saloons . . . is a very feeble and superficial move upon the problem of alcoholism"

Then the painstaking Laboratory considered separately the statistics of fathers and mothers, of girls and boys. It was found

that while the father's drinking did not appear to have any effect upon the physique of either boys or girls, the mother's drinking showed a slight correlation. Was this due to pre-natal poisoning? If the correlation were even (between the boys and girls), it would have pointed that way. But it was not even. The girls showed more bad effect than the boys.

It is probable, therefore, that it was the environment of the home that was chiefly responsible.

A drinking mother bespeaks poorer care for the children than a drinking father; and girls feel it more than boys, since they stay home more. Probably, too, the employment of mothers was a factor. An employed mother has less time to look after her children. The Manchester report gave no data of employment; but the Edinburgh report showed 43.6 per cent. of the drinking mothers employed, and only 26.4 per cent. of the sober mothers.

Second, as to the child's general health. Here the children were divided into four categories: the healthy, the delicate, the

epileptic and phthisical, and those who died young. They appear as follows, expressed in percentages:*

	Father	
	Temp.	Intemp.
Son Healthy.....	57.8	59.2
Delicate.....	14.8	15.8
Epileptic and Phthisical.....	9.1	4.3
Died young.....	18.3	20.7
Father		
	Temp.	Intemp.
Daughter Healthy.....	57.2	61.7
Delicate.....	14.8	13.9
Epileptic and Phthisical.....	6.1	3.9
Died young.....	22.0	20.5
Mother		
	Temp.	Intemp.
Son Healthy.....	57.5	61.7
Delicate.....	15.0	19.4
Epileptic and Phthisical.....	5.3	2.2
Died young.....	22.2	16.7
Mother		
	Temp.	Intemp.
Daughter Healthy.....	59.0	59.6
Delicate.....	14.7	18.2
Epileptic and Phthisical.....	8.4	3.0
Died young.....	18.0	21.2

Surveying this table, it is really hard to say whether the connection lies between parental drinking and good health or bad health on the part of the children. Clearly, there is no significant association either way.

Third, concerning intelligence. Of all things that we have been accustomed to assume as likely, one of the foremost is that parental drinking weakens children's wits.

But it was distinctly untrue of these English school-children; so very untrue, in fact, that there is a slight balance the other way. The returns show that there were born to drinking fathers 34 per cent. of defective sons and 30 per cent. of defective daughters; to drinking mothers, 40 per cent. of defective sons and 24

*Observe the high proportion of the epileptic and phthisical among the children of the sober. This probably indicates the fact that enfeebled constitutions crave alcohol less than strong ones.

†The survey of children should be associated with a like survey of parents; otherwise, how can we be sure of its even being a fact that drinking parents are physically or mentally differentiated from sober parents? If it should turn out, for instance, that they are not so differentiated, one could obviously not look for much differentiation of offspring, or claim as a secondary hereditary result whatever differentiation might be found. The Laboratory was not able to associate a survey of the parents with its survey of the children. An interesting line of approach, however, may be made through the Edinburgh report, which records the wages of parents in the families canvassed. By this it appears that when both parents drink, mean wages of father are 24s. 8d.; when one parent drinks, 25s. 6d.; when neither parent drinks, 25s. 5d. The wages, then, of the Edinburgh drinking man average 25s., the sober man 26s. If alcoholics are physically and mentally inferior, Professor Pearson suggests that their inferiority plus the inconvenience of their insobriety to an employer would be indicated by a greater wage-difference. Yet it is clear that higher physique or intelligence might be discounted by bad habits. An inquiry of this kind in the United States would be one of the most useful and interesting features of a eugenic survey.

per cent. of defective daughters. While there were born to sober fathers, 41 per cent. of defective sons and 31 per cent. of defective daughters; to sober mothers, 39 per cent. of defective sons and 30 per cent. of defective daughters.

Fourth, regarding eyesight. The children were examined for normal vision, short and far sight, and three varieties of astigmatism. The fathers, mothers, sons, and daughters were all considered separately. I omit the tables to save space; but their summary shows two remarkable facts:

(1) The larger proportion of normal eyes is found among the children of drinking parents.

(2) The larger proportion of hypermetropia, myopia, mixed and myopic astigmatism, is found among the children of sober parents.

An analysis of the tables themselves reveals no correlation between parental drinking and bad eyesight in the child. If anything, it is the other way: the children of drinking parents have the better eyesight.

This discovery reminded the Laboratory of another curious thing. In a previous investigation of other matters, the Laboratory had noticed a similar slight correlation between normal eyesight and bad social conditions. Where, for instance, you found bad housing, congestion, or parents of depraved morals, you were apt to find it associated with good eyesight in the children. It occurred to the Laboratory that the cause was probably the same in both cases—namely, that the child spent more time outdoors. Bad living-conditions tend to drive out children, and so do drunken parents.

So the Laboratory set out to find the correlation (1) between parental drinking and how the child spent its spare time, and (2) between the child's vision and how it spent its spare time. The result showed a considerable connection between parental drinking and time spent in the streets, especially where the parent who drank was the mother. In that case it was made clear, as one would suspect, that the mother's drink was more likely to drive out the child, and that more boys were driven out than girls.

The correlation that was found between the eyesight of a child and where it spent



its time brought out a curious result. The largest percentage of normal eyes was found to be among those who spent their spare time in the street. This is as we should expect. The next largest, however, was not among those who spent their spare time partly in the street and partly indoors, as we would suppose, but those who spent it practically all indoors. The reason for this has not been determined. All that can be said is that greater time in the street for either boys or girls does not appear to be continuously associated with better eyesight, either as regards

acuity of vision or correct refraction—the test being made for each, and the correlation for each being separately computed.

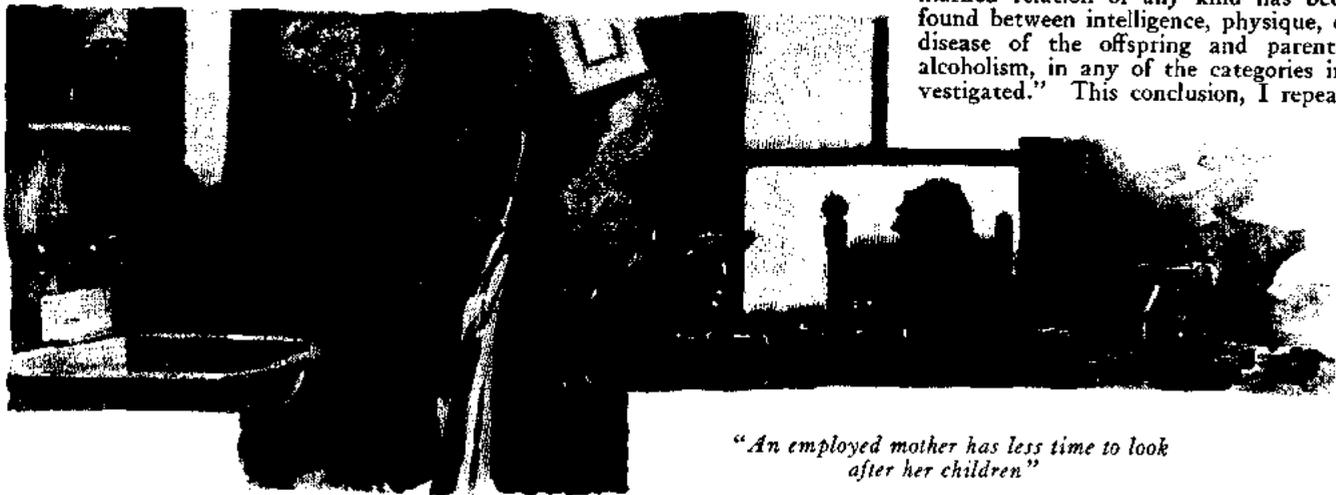
Finally, although tables do not much adorn a page, the table showing the correlation between parental drinking and child-mortality must be given. Here the drinking parents were divided into two classes: those who drink regularly and the "periodicals," as we know them, or those who go on sprees.

	Father		
	Sober	Drinks	Spree
Average size of family.....	5.99	6.20	6.03
Average number dead children..	1.73	1.99	1.97
Net family.....	4.26	4.21	4.06
Death-rate, per cent.....	28.9	32.1	32.7
Mother			
	Sober	Drinks	Spree
Average size of family.....	5.91	6.25	6.32
Average number dead children..	1.68	2.09	2.28
Net family.....	4.23	4.16	4.04
Death-rate, per cent.....	28.4	33.4	36.1

It will be seen that the death-rate is higher when the mother drinks than when the father drinks. It is possible that this may indicate some toxic effect. But noting the especially high death-rate where the mother is a "periodical," it might more reasonably be inferred that when the mother drinks a large number of deaths may be due to carelessness or misadventure.

Another common error is indicated in this table; namely, that the population would increase much faster were it not for the child-mortality due to alcohol. The relative size of the net family goes to show that the abolition of alcohol would not make a difference of one per cent. in the increase of the population.

Professor Pearson sums up the results of the investigation by saying that "no marked relation of any kind has been found between intelligence, physique, or disease of the offspring and parental alcoholism, in any of the categories investigated." This conclusion, I repeat,



"An employed mother has less time to look after her children"

is not final. Finality, in a matter of this kind, is an affair of many years and much research. But as far as the investigation has gone it is dependable; and Professor Pearson, who invariably speaks with the reverent caution of a true man of science, goes so far as to say that nothing in sight at present seems likely to modify it.

It is a startling conclusion, especially to those trained, as I was, to believe otherwise. To some it may be unwelcome and shocking. It may make upon them the painful impress of an attempt to whittle down the seriousness of the problem of drink.

But truth, if one is but willing to trust it, is never found unfriendly to a good cause. If Professor Pearson's conclusions are finally proved beyond question, the cause of reform will not be weakened but strengthened. The moral burden of responsibility for this national evil will be increased, not lightened. Seen by this new light, the problem will no doubt show many aspects of difference from our present apprehension of it, but all its seriousness and all its insistency will still be there; nay, in fact, they will be redoubled.

We now think of alcoholism as a habit that a young man slips into largely because he gets into the way of bad company and saloons are handy—something, at all events, largely self-cultivated. We hold our social responsibility commensurate merely with the saloon-facilities we offer him, and conceive that this collective responsibility ends with the closing of the saloon. This is about our conception of temperance-reform at the present time.

But if Professor Pearson's conclusions are correct, this conception is inadequate. No doubt, a man will not become a

drunkard if he can get nothing to be drunk with; but merely keeping him sober does not solve, nor even touch, our real social problem.

Because, according to Professor Pearson, alcoholism is a *symptom*—a symptom of a defective stock. In his scientific language, it is a "somatic mark of a defective germ-plasm in the stock." The disorder then reaches far beyond the individual case; and keeping the man sober by mere mechanical means does not remedy it. He is prevented, certainly, from degenerating into a certain definite type of nuisance; but while that is something, in view of the real problem it is very little. Such treatment merely amounts to suppressing some outward and visible signs of his disorder, but it does not even approach the root of the disorder itself.

We are to group alcoholism, imbecility, certain forms of insanity, epilepsy, criminality, albinism, etc., as allied symptoms of a common disorder—as the various expressions and outworkings of "the defective germ-plasm in the stock." Now we may suppose a case. Here, let us say, is A, who is a pronounced alcoholic. Let us admit the defects in are directly his alcohol-even assume dren are all body and the hereditaint in the made him an still there. B. and C., and E., his G., his sec- H. and I.,



ents never drank a drop, are respectively epileptics, sexual perverts, criminals, and imbeciles. How is our problem lessened? Is it not immeasurably increased? And what fundamental bearing has the closing of saloons upon that set of conditions? The ideal enforcement of an ideal law would merely prevent A. from getting drunk. It reaches no further.

Closing the saloons is in my judgment an unqualified good thing. I am for it with all my heart, though not by the unintelligent and indiscriminate methods which overlook the vast amount of social service that the saloon now performs, and propose no effectual substitute. I am convinced that the saloon in New York City, for example, performs more social service than the churches and organized charities put together. It is lamentable that the saloon has been permitted to assume this function; but, having permitted it to do so, we must perceive that the saloon is performing it with great efficiency. It is this consideration only that qualifies my wish to make a clean sweep of the saloon.

Yet in view of Professor Pearson's conclusions, closing the saloons—though a highly desirable measure in itself—is a very feeble and superficial move upon the problem of alcoholism. The real reform would begin when we concentrate upon the real problem—the *defective stock*. Close the saloons by all means; but let us be quite sure, with the assurance of science and not of fanaticism, whether our responsibility really ends there, or even begins there. Perhaps we may find that too much of our reforming energy has been spent upon a *symptom*, and that our blows have fallen far wide of the real disorder.

Death the Adventure

By Sarah N. Cleghorn

NEIGHBOR, what are the odds, though we never have left the workshop
Or laid down shovel and broom, to spend the summer in Europe,
Or even to sail the Great Lakes, or behold the Yosemite Valley?
Already our tickets are bought for far more extended travel,
Stranger lands shall we see, and with new friends make acquaintance.
Courage! Home is not all: there are houses and gardens elsewhere:
(Elsewhere gardens, perchance, as lovely as are the Italian.)
Porter in the black cloak . . . Alas, I am not quite ready. . . .
Yet when the wrench is past, and healed the clean stab of parting,
We shall observe and enjoy the sights and the sounds of our journey,
And treasure them up to repeat when we meet once more our beloved.

Wind, blow full the wide sails for death the adventurous voyage!
He that has traveled much is keen to discover fresh marvels,
And he that has traveled but little has treasured his childhood wonder.
Neighbor, what if it rest with us to give the direction,
Whether the ship shall round Cape Fear, or the Cape of Good Hope?