

tions of the blood. Normal blood, for example, gives a standard schlieren pattern.

It is found in many diseases which have the common characteristic of fever—pneumonia, peritonitis, rheumatic fever and lymphatic leukemia—that in every case the peak representing alpha globulin was greatly enlarged. It may be possible that when scientists have extended the new method they will be able to “read” schlieren patterns of blood plasma as readily as a spectroscopist can look at spectrum plates and distinguish the bands and lines of molecules and atoms.

Dr. MacInnes credited the Swedish scientist Arne Tiselius with improvement in the moving boundary apparatus which has made possible the new advance. For the development of the au-

tomatic recording apparatus to obtain the schlieren patterns he praised the work of Dr. Lewis G. Longworth of the Rockefeller Institute.

The schlieren patterns of blood are obtained by passing a beam of light through a composite solution of blood proteins. This beam, eventually, falls on a photographic plate. As an electric current is applied to the protein solutions they start to move—some faster than others—so that soon a series of boundaries between the different proteins originate. The light, shining through these boundaries, encounters materials with different refractive indices (light bending power).

By optical means these boundaries show up at the peaks of the schlieren patterns.

Science News Letter, July 20, 1940

in part to a reaction from the hard idea of sacrifice inherent in Christianity. It found bogus scientific authority from the theory of evolution. The bitter fact was disregarded that, just as a house of cards carefully erected can be blown down in a second, so the decency and orderly freedom, the art and knowledge and beauty, the simple and kindly customs, which men have slowly and laboriously built up, can be quickly and easily destroyed. Such destruction was long regarded, is still regarded by many, as unthinkable.

“It is not unthinkable, it is just what is happening now to many millions of people in various parts of the world: it is what may happen everywhere if mankind goes on worshipping a false god.”

Many civilizations have perished before, Prof. Hill observed, many races of animals have become extinct. Because—in pseudo-scientific jargon—of the survival of the fittest? The only evidence for that theory is that in fact they did not survive. Can we be sure that man and his present civilization are fitted to survive? or mercy, tolerance and honesty for that matter? Or may we look forward, not to extinction, but to a completely orderly arrangement like that of the ant-hill or the hive, in which freedom is impossible, spiritual things are forbidden, and unrealities like kindness, mercy and tolerance are eliminated?

Such questions may sound like bitter cynicism, Prof. Hill admitted. He continued:

“A false god, some will say, may be better than none. Not always. False gods take people, and their unfortunate neighbours, to strange destinies sometimes, as we see in Europe and Asia today, as we may very well see in other continents before long. Why not look for an alternative to the illusion of inevitable progress which has let us down so badly? For there is one, but it is harder to accept.

“The idea of progress is a generous one: it has moved high minds and warm hearts to do many of the things worth doing: I do not say that the idea of progress is false. The mistake has been to suppose that progress is inevitable: Whereas, in fact, even what we have of decency and orderly freedom can be held only by continual effort, continual sacrifice, continual watchfulness. No system which man can create will even maintain the very moderate estate he has achieved, far less advance him beyond it, without the conscious and willing service and the coordinated effort of the majority of the people.”

Science News Letter, July 20, 1940

GENERAL SCIENCE

Only by Continuous Effort Can Disorder be Prevented

British Nobelist Warns Against Optimistic Assumption Of Automatic Progress, Fashionable in Last Century

IN DAYS like these each succeeding headline reinforces the scientific rule that in any material system the most probable condition is one of chaos.

These are days when scientists in common with the rest of us look at the world critically, fearful that we are engaged in a crucial, final experiment.

Prof. A. V. Hill, Nobelist in medicine and secretary of Britain's Royal Society, in delivering the commencement address at the California Institute of Technology recently emphasized that the most certain of all scientific rules is that contained in the Second Law of Thermodynamics. In a system, once chaotic,

order can be set up only by the expenditure of energy from without.

“Left to itself an ordered system gradually reverts to chaos,” Prof. Hill said. “So it is in human affairs: it is only by the continual expenditure of effort that disorder can be avoided.

“For many years it was the fashion—based as little upon fact as most other fashions are—to write and speak, and finally to think and act, as though progress was inevitable. Those who doubted this creed were thought to be backward and reactionary.

“Such baseless optimism has done inestimable damage. It may have been due

Science News Letter Subscription Coupon

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

Start my subscription to SCIENCE NEWS LETTER for 1 year, \$5

Renew 2 years, \$7

Name _____

Street Address _____

City and State _____

(No extra postage to anywhere in the world)