was succeeded by the idealistic in the thirteenth and fourteenth centuries, which in turn gave place to the sensate that has prevailed in modern Western culture for the last four or five hundred years.

The cause of the historical oscillation from system to system is at base internal. Both the ideational and the sensate systems are partly true and partly false. When one of them tends to become monopolistic, its false part grows at the expense of its valid part, leading to a partial retreat from total human reality and value, with disastrous consequences for intellectual and esthetic creativeness, economic security and social order.

Our present crisis is due, Sorokin believes, to the fact that the fundamental form of modern Western culture and society—the sensate—is declining. This decline will be followed, not by the death of Western civilization as such, in the Spenglerian or other pessimistic sense, but by survival with the emergence of and shift to a neo-ideational or neo-idealistic dominant configuration.

The present work, like the original "Social and Cultural Dynamics," is well calculated to call forth either rabid or rapturous responses in the reader, depending in part on his sympathies with or antipathies to "ideational," "idealistic" or "sensate" philosophies of life. For while the author defends his hypothesis with an impressive mass of factual data, he permits his own sympathies and antipathies to show through on page after page of his discussion, and perhaps even in the appellation "sensate."

As regards Sorokin's statistical methods, for which he has been so severely criticized, it must be said in his defense that most of the criticisms have been met by him in anticipation (*cf., e.g.,* "Social and Cultural Dynamics," III, N. Y., 1937, ch. 9). He explicitly recognizes weaknesses in his statistical treatment of the cultural and social units manipulated, but maintains that it yields an appreciably more accurate measurement of long-time cultural drifts than does the customary verbal quantitative treatment of the classic historian.

Less defensible and more questionable are a number of concrete historical statements. Such, to illustrate by just three, are: "the climax (in number and importance of discoveries) in most of the exact sciences was reached, not in the twentieth century, but either in the nineteenth or (for mathematics) the eighteenth century" (p. 128); "psychology and anthropology of the twentieth century are, again, either a mere accumulation of so-called facts or, even worse, a definite decline so far as real insight into the respective phenomena is concerned" (p. 267); "mental disease [not merely clinical recognition thereof or institutional intake] has been on the increase, particularly during the past few decades" (p. 207).

Sorokin appears to have made a good case for the operation of internal factors, above noted, in the historic oscillation of supersystems. But are these the only crucial factors? For example, as "ideational" patterns tend on the whole to be more prominent in cultures of low than in those of high scientific and technological levels, may not the decline of the sensate supersystem and the emergence of the ideational in Europe about the fourth and fifth centuries A.D. have been in critical measure the consequence of external causation, namely, the barbarian invasion? As regards, then, Sorokin's prognosis for Western civilization, one is inclined to say: Maybe, but can we predict without knowledge of *all* the great determinant factors in change?

All in all, however, whether we agree or disagree in whole or in part with the author, his great synthesis is an arresting one. He has had the courage to attempt a task of exceptional magnitude and he has carried it to completion with dogged energy, singular resourcefulness and originality, and high creative ability. His theory, at its lowest valuation, gives us a formula that enables us to think of great masses of data in an orderly and meaningful way. At a higher valuation, it gives us illuminating insights into some of the most significant inner realities of culture, society and life, and of the impact of science thereon.

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SPECIAL ARTICLES

THE PRESENCE OF A CORTIN-LIKE SUBSTANCE (COLD PROTECTING MATERIAL) IN THE URINE OF NORMAL MEN[1]

THE fact that adrenalectomized rats and mice are more sensitive to low environmental temperatures than normal animals has been demonstrated by various investigators[2, 3, 4, 5]. Adrenalectomized rats subjected to low temperatures may be protected by adrenal

[1] Supported in part by a grant from the Josiah Macy Jr. Foundation.

[2] F. A. Hartman, K. A. Brownell and A. A. Crosby, *Am. Jour. Physiol.*, 98: 674, 1931.

[3] H. Selye and V. Schenker, *Proc. Soc. Exp. Biol. and Med.*, 39: 518, 1938.

[4] R. Tyslowitz and E. B. Astwood, *Am. Jour. Physiol.*, 136: 22, 1942.

[5] M. Zarrow, *Proc. Soc. Exp. Biol. and Med.*, 50: 135, 1942.

cortical extracts[2, 3,4] and by pure adrenal cortical steroids such as desoxycorticosterone[4, 6], corticosterone[7] and compound E[7]. Adrenalectomized mice may also be protected by adrenal cortical extract[6], desoxycorticosterone[5, 6] and progesterone[5]. We have used this test of sensitivity of adrenalectomized rats to low temperatures to demonstrate material in the urine of normal men which appears to be related in its biological action to the adrenal cortical steroids. We are not prepared at this time to say whether this biologically active material is specifically an adrenal cortical steroid metabolite. Our experience thus far, however, suggests that this may be true.

Cortin-like action of extracts of urine from various types of patients has been reported by Anderson, Haymaker and Joseph[8] and by Weil and Browne[9, 10]. These investigators studied urine from patients with Cushing's syndrome, hypertension, chronic osteomyelitis, as well as post-operative patients who had no symptoms of shock. The former group of investigators used the maintenance of the adrenalectomized rats as their means of demonstrating biological activity, while the latter group used the technique described by Selye and Schenker[3] involving the sensitivity of the adrenalectomized rats to cold. Perla and Marmorstein-Gottesman[11] reported the presence of a benzene soluble material in human urine which was capable of increasing the resistance of adrenalectomized rats to histamine, while Grollman and Firor[12] reported that benzene extracts of human urine were capable of maintaining adrenalectomized rats.

The urines of three normal men, 26, 26 and 31 years of age, respectively, were collected over a three-day period. The fresh urine was extracted three times with ethylene dichloride at room temperature. For each extraction one part of ethylene dichloride to four parts of urine was used. The ethylene dichloride extracts were evaporated to dryness *in vacuo,* taken up in small volumes of absolute ethanol and again evaporated to dryness. This procedure was repeated twice. This technique is similar to that previously employed by Weil and Browne[10]. The final dry, brownish oil was taken up in 10 per cent. ethanol and administered by stomach tube to adrenalectomized rats weighing 35 to 45 grams. The rats were adrenalectomized 24 hours before the assay was run. The details of the assay technique will be described in another report.

[6] Unpublished experiments.

[7] E. C. Kendall, *Jour. Am. Med. Assn.,* 116: 2394, 1941.

[8] E. Anderson, W. Haymaker and M. Joseph, *Endocrinology,* 23: 398, 1938.

[9] P. Weil and J. S. L. Browne, SCIENCE, 90: 445, 1939.

[10] P. Weil and J. S. L. Browne, *Proc. Am. Physiol. Soc.,* 121: 652, 1939.

[11] D. Perla and J. Marmorsten-Gottesman, *Proc. Soc. Exp. Biol. and Med.,* 28: 1024, 1931.

[12] A. Grollman and W. W. Firor, *Proc. Soc. Exp. Biol. and Med.,* 30: 669, 1932–3.

The results on the urines collected from three normal men are represented in Table 1. It is seen that the

TABLE 1

RESPONSE OF ADRENALECTOMIZED ANIMALS (EXPOSED TO 5° C.) TO EXTRACTS, FROM THE URINE OF NORMAL MEN

Subject		Urine collection Days	Administered per rat extract equivalent		Number of rats	Mean survival Hours	Increase in mean survival Per cent.
Number	Age		cc	Hours			
–	—	–	0	0	9	5.9	—
1.	26	3	295	6.0	8	8.7	48
2.	26	3	194	5.8	10	8.1	37
3.	31	3	236	6.0	9	8.9	51

equivalent of 6.0, 5.8 and 6.0 hours of urine respectively produced increases in survival time of 48 per cent., 37 per cent. and 51 per cent., respectively. When these increments are compared to the responses found for a Wilson Adrenal Cortical extract, it is found that the urine contains cortin-like material equivalent to 0.15 to 0.18 cc of extract per day.

In addition to the experiment described above, it has been possible to demonstrate cortin-like activity in the extracts of composite samples of normal male urine and in the urine of post-operative male patients, but we have been unable thus far to detect such activity in the urine of patients with Addison's disease.

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HAY FEVER AND VITAMIN C

DURING the past four years one of us made occasional observations indicating a lowering of the body level of vitamin C during hay-fever attacks.

HISTAMINE THEORY

Other workers developed the interesting theory that histamine, $C_5H_9N_2$, although a normal constituent of the blood, is thrown into the blood stream in excessive amounts during allergic attacks and that this excess histamine is responsible for some of the unpleasant symptoms. On the assumption that histamine might react with vitamin C, or ascorbic acid, we mixed water solutions of the two substances but observed no reaction in absence of free oxygen. Upon bubbling a slow stream of air through the solution it was easy to detect evolution of ammonia. Titration with 2,6-dichlorophenol-indophenol showed loss of vitamin C. Later we learned that this reaction was already known. Since there is a little dissolved oxygen in blood serum, the body furnishes the proper conditions for very slow reaction.