vided an immediate basis for further cooperative work has already been demonstrated, as extended calculations on several questions have already been undertaken by several theoretical physicists, and the Physics Seminar at one university will be devoted next year to geophysics.

Representatives from a total of twenty-four universities, research organizations and governmental bureaus took part in this conference. Among those attending the conference from outside of Washington were: Professors J. Bardeen, H. A. Bethe, F. Bitter, G. Breit, W. H. Bucher, W. M. Elsasser, E. Fermi, D. T. Griggs, B. Gutenberg, D. R. Inglis, I. I. Rabi, J. C. Slater and J. H. Van Vleck.

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SPECIAL ARTICLES

COENZYME I AND RIBOFLAVIN CONTENT OF LIVERS OF RATS FED BUTTER YELLOW

KINOSITA[1] and co-workers have shown that liver cancer can be produced in rats by the oral administration of dimethylaminoazobenzene (butter yellow). The chemical is fed (20 cc of 3 per cent. solution in olive oil to 1,000 grams of diet) in a diet of brown rice supplemented with carrot. Nakahara, Fujiwara and Mori[2] reported that beef liver added to the diet will prevent cancer production and Ando[3] published evidence that yeast also is protective.

We have investigated the *in vitro* respiratory rate as well as the Coenzyme I and riboflavin contents of the livers of rats fed various diets, as follows: (1) normal diet, (2) basal diet without butter yellow, (3) basal diet with butter yellow and (4) the same with 15 per cent. of dried brewers' yeast (No. 2040 Fleischmann Laboratories) added.

The Qo_2's were measured in a Warburg respirometer. The Coenzyme I content was measured by means of the fermentation technique of Myrback,[4] which was standardized in our laboratory by Dr. S. O. Dexter. The riboflavin was measured by a modification of the method of Hodson and Norris.[5]

We have found that the riboflavin and the Coenzyme I contents of the livers decrease markedly, whereas the Qo_2's of the liver slices do not change. Nakatani, Nakano and Ohara[6] also found no difference in the Qo_2's of the liver slices throughout similar experiments.

Table 1 shows the results obtained from the study of livers of animals which had been on their respective diets between 50 and 110 days.

TABLE 1

	Normal diet		Basal diet		Basal diet and butter yellow		Basal diet and butter yellow and whole yeast		Butter yellow tumor		
Qo_2	8.8	(8)	9.0	(14)	9.5	(12)	9.0	(8)	9.5	(8)	
Ribo-flavin	170	(8)	124	(12)	70	(17)	170	(8)	33	(8)	gammas per gm dry wt.
Co I	1390	(8)	1370	(12)	500	(21)	1400	(8)	150	(8)	gammas per gm wet wt.

NOTE: Numbers in parentheses refer to number of animals.

The Coenzyme I content of the kidneys of the same animals was not decreased in any group, a fact which serves as a check of the precision of the method:

CoI 1410 (8) 1400 (12) 1490 (16) 1380 (8) gammas per gram wet weight

The measurement of either flavin or Coenzyme I content of the liver serves as a useful index of the protective effect of dietary supplement.

Experiments are now in progress to determine whether or not the administration of nicotinic acid and riboflavin in large amounts will protect against the action of dimethylaminoazobenzene in the rat. Nakahara and coworkers have reported that the administration of 3 mg per rat per day of nicotinic acid and 20 gammas of riboflavin does not protect.[2b]

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BOVINE PSEUDORABIES OR "MAD ITCH" VIRUS

SINCE Shope[1] described "mad itch" in cattle in Iowa and subsequently[2] set forth the immunological relation of this disease to pseudorabies as described by Aujeszky[3] in Hungary, an occasional effort has been

1 Kinosita, *Trans. Jap. Path. Soc.*, 27: 665, 1937.
2 Nakahara, Fujiwara and Mori, (*a*) *Gann*, 33: 57, 1939; (*b*) *Gann*, 33: 406, 1939.
3 Ando, *Gann*, 32: 252, 1938.
4 K. Myrback, *Ergeb. Enzymforschung*, 2: 139, 1933.
5 Hodson and Norris, *Jour. Biol. Chem.*, 131: 621, 1939.
6 Nakatani, Nakano and Ohara, *Gann*, 32: 240, 1938.
1 R. E. Shope, *Jour. Exp. Med.*, 54: 233, 1931.
2 *Ibid.*, *Proc. Soc. Exp. Biol. and Med.*, 30: 308, 1932.