vidual muscle fibres. This happened when there was associated with the growth a reactive connective tissue proliferation due to contaminating bacteria. It was plain that from an early period the cells of the papilloma possessed potentialities for malignant behavior. But rabbits appropriately tarred may develop carcinoma of the ear within 2 weeks;[4] and yet tar cannot be considered as the proximal cause of the cancer. Even if the Shope virus gave rise forthwith to carcinoma the view would still be tenable that it had done no more than provide the conditions requisite to a cancerous change of unknown cause. At the moment this much only seems certain: The papilloma virus gives rise to skin growths which for some time are benign tumors, though their cells have malignant potentialities. Gradually, by alterations which involve no discontinuity of form or behavior, the growths take on the character of typical carcinomas. Bacterial infection frequently acts to precipitate the change.

7771 C

Sanitary Significance of the Succession of Colon-Aerogenes Organisms in Feces.

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A study has been made of 57 specimens of feces from normal humans, from which by direct plating, 1454 strains of bacteria have been isolated. Eight of the 57 were stored at 37°C. and plated 60 times during the period of their viability, 2 to 3 months, yielding 592 strains. Duplicates of these 8 and 4 others of the 57 were kept in the ice box and on 162 platings have yielded 1086 strains. The period of viability for cold stored suspensions varies but may exceed 15 months. The feces were suspended in sterile saline to a heavy turbidity and platings have been made from these suspensions. The procedure diagrammed has been adopted. It provides for adequate purification of strains isolated, permits a comparison of the reactions of purified and original strains, and utilizes the tests now considered most significant for the group. Recognition of lactose-deficient organisms in normal feces[1] has led to the inclusion in the series of all organisms typical of the group which ferment dextrose.

[4] Bittman, O., *Z. f. Krebsforsch.*, 1925, **22**, 278.

[1] Parr, L. W., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1019.

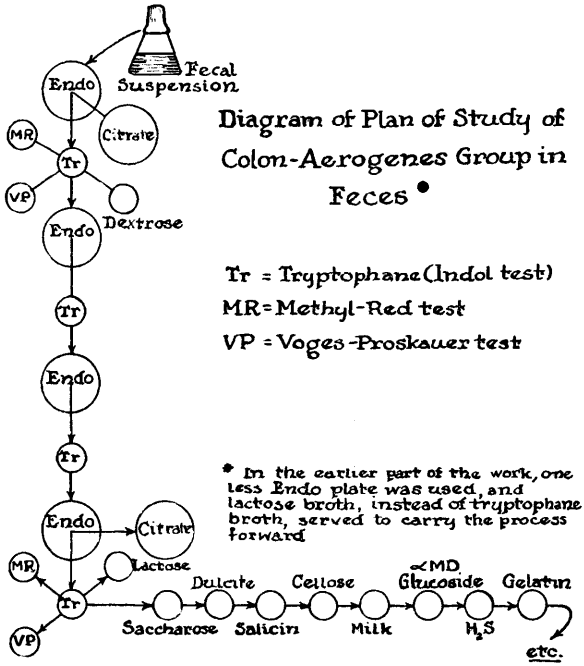

FIG. 1.

Strains failing to ultimately dissimulate lactose are dropped. Adequate sampling has been the rule, 11.2 organisms on average being picked from each of the 279 platings. The strains have been tested for their fermentation of dextrose, lactose, saccharose, dulcite, salicin, alpha-methyl-d-glucoside and cellose; for their methyl-red, Voges-Proskauer, citrate utilization, milk and gelatin reactions; and for the production of indol and hydrogen sulphide. Data pertinent to the topic of this paper are presented in Table I.*

The only group member found in several fresh fecal specimens was some form of Coli (Escherichia). Of the 1262 strains in the corrected summary only 2 were Intermediate (Citrobacter). On storage the 2-3% of Aerogenes (Aerobacter) originally present in fresh feces greatly increase and the Coli disappear—a process more marked for specimens ice box stored and in such specimens complete in about 5 weeks. Almost coincident with the disappearance of typical coli intermediates types appear and they increase and persist with cold storage. They occur also but are not prominent at any

* Intermediates are organisms of the Colon-Aerogenes group which possess one or more Coli characteristics and one or more Aerogenes properties. Aerogenes and Intermediates utilize citrate as a carbon source; Coli does not.

TABLE I.
Summary of all Data.

	Specimens examined	Times plated	Strains isolated	% strains Coli	% citrate utilizers Intermediates
Fresh feces	57	57	1454	94.6	30.7
37°C. storage	8	60	592	55.5	12.6
Ice box storage	12	162	1086	32.9	32.7
		Corrected Summary			
Fresh feces[2]	44	44	1262	97.7	7.1
37°C. storage	8	60	592	55.5	12.6
Ice box storage[3]	11	139	956	22.8[4]	32.7

[2] Corrected by omission of 13 platings from feces of babies less than 3 weeks old.

[3] Corrected by omission of 23 platings from specimen No. 4, in which the original feces contained so few citrate utilizers that only Coli were sampled.

[4] Were specimens stored at ice box temperature not plated before 5 weeks this figure would approach *zero*, where the original sample contained any citrate utilizers.

stage in the specimens held at 37°C. With further storage the *Aerogenes* become degraded, particularly with respect to lactose fermentation, and gelatin liquefiers appear. In early storage stages when Coli are disappearing indol negative Coli and Coli anaerogenous in all sugars appear. Slow lactose fermenting Coli have not been encountered under the conditions of this experiment. Practically all forms of the group which have been reported from soils, grains, waters, foodstuffs, etc., and not heretofore considered as fecal are to be found at one stage or another in stored feces. It is not true that the anomalous strains reported by many authors are necessarily mixed cultures.

On the other hand it is possible for a material quantity of feces stored many months to yield no form of the group other than Coli identical with those of fresh feces. Specimen 4, mentioned in the summary, illustrates this point, interpreted as due to the original fecal mass containing no viable citrate utilizing organisms. That such specimens do occur would seem to be evidence that distinct forms appear in feces at different times by virtue of succession rather than by variation. By contrast it seems most likely that the degraded forms are induced variations of species previously present. The feces of new-born babies on mother's milk contain so few Colon-Aerogenes organisms that they have not been found in the specimens examined even by enrichment of the material in lactose broth. In bottle-fed babies, by contrast, the Colon-Aerogenes flora is significant but it may be represented by so many citrate utilizing forms that the summary has been corrected for the 13 babies examined until a more thorough study of the group in babies can be made

to establish the significance of the Colon-Aerogenes distribution in this age group.

It will thus be seen that the question of which Colon-Aerogenes organisms are fecal and which are not is greatly complicated. Under certain circumstances feces may furnish such quantities of normal and degraded Aerogenes, gelatin liquefying Aerobacter or Cloacae, and Intermediates as to make untenable the assumption that such forms necessarily come from such environmental sources as soils and grains. Furthermore, the finding of Coli typical of those of freshly excreted feces may be no guarantee that the Coli found indicate recent fecal pollution.†

7772 P

Blood Pressure Response to a Standard Stimulus in the White and Negro Races.

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A new concept of the etiology and pathogenesis of essential or arteriolar hypertension, based upon the neurogenic theory, has recently been brought forth by Hines and Brown.[1] According to them there exists a primary constitutional factor manifested by a hypersensitive or hyperreactive vasomotor system which is activated by secondary subsidiary factors in the form of environmental, infectious or toxic agents. Furthermore, they advanced the opinion that this constitutional abnormality should be capable of detection in early life, and, to attain this end, devised a standard vasomotor stimulus based upon the blood pressure response to the application of cold.

We have called attention[2] to our discovery of a rather striking difference in the incidence of hypertensive cardiovascular disease in the white and negro races in this locality. We, therefore, felt that, in view of this racial difference, an exceptional opportunity existed

† For much valuable assistance in this project we are indebted to Mrs. E. B. Crawford.

* Kass Scholarship Award Fellow.

[1] Hines, E. A., Jr., and Brown, G. E., *Ann. Int. Med.*, 1933, **7**, 209.

[2] Schwab, E. H., and Schulze, V. E., *Am. Heart J.*, 1932, **7**, 710.