COMMUNICATIONS TO THE EDITOR

THE ELECTRICAL CONDUCTIVITY OF SILICIC ACID GEL MIXTURES DURING GELATION

Sir:

A study has recently been made in this Laboratory of the electrical conductivity of various mixtures of aqueous solutions of sodium silicate and acetic acid. Measurements were obtained as soon as possible after mixing and were continued until some hours after the gel mixture had set. By this means it was hoped to present evidence in favor of either the fibrillar or the cellular theory for the structure of a silicic acid gel. Any considerable increase in electrical resistance would be considered to be strong evidence for the cellular theory.

In no case was a change of resistance obtained greater than the possible errors of measurement ($< 0.4\%$) from the first reading after mixing until the gel was well set. Four sets of typical data are shown in Table I. Concentrations are expressed in gram moles per liter, the silicate being expressed in its equivalent of sodium hydroxide and silica.

I. ELECTRICAL RESISTANCE OF SILICIC ACID GEL MIXTURES

Concentrations, gram moles per liter			Time of set, minutes	Resistance, ohms	Change in resistance
SiO_2	NaOH	CH_3COOH			
1.452	0.876	1.718	35	111	None
0.970	.584	1.140	60	136	None
.485	.292	0.570	300	213	None
.242	.146	.285	1440	450	None

A more complete study of this problem is now under way, using a new type of cell and bridge and a 60-cycle alternating current galvanometer.

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THE TRIMETHYLPENTANES

Sir:

The fact that the dehydration product of methylethyl-*tert*-butylcarbinol on hydrogenation apparently gives a single octane [private communication, P. L. Cramer, General Motors Research Laboratories] seemed to be contrary to our findings that the dehydration gives some rearranged product [THIS JOURNAL, **54**, 4011 (1932)]. Consequently we have prepared 2,2,3-trimethylpentane (corresponding to the normal dehydration product) and 2,3,3-trimethylpentane (corresponding to the rearranged product).