Table III. RECORDS OF INDIVIDUAL COOKS

Date, June 2, 1916.

Name	Total Progress Record		Relative Value 50		Relative Value 35		Relative Value 10		Relative Value 5		General Information					
			Temperature Record		Color Record		Time Record		Blowing Record		Average Maximum Temp.		Average Test 5th Hour 1.25		Average Test 6th Hour 0.80	
	Daily Avg.	Mo. Avg.	Daily Avg.	Mo. Avg.	Daily Avg.	Mo. Daily	Daily Avg.	Mo. Avg.	Daily Avg.	Mo. Avg.	Daily Avg.	Mo. Daily	Daily Avg.	Mo. Avg.	Daily Avg.	Mo. Avg.
Myler	88.2	88.3	84.8	85.9	99.3	98.3	90.6	88.6	58.8	59.5	293.6	294.7	139	134	100	103
Duggan	86.2	87.2	81.8	85.1	96.4	97.7	95.3	91.9	59.2	60.8	298.0	298.5	134	133	96	95
S. T. Ellis	85.8	87.1	79.1	83.2	98.8	97.7	95.1	93.8	57.9	59.7	299.8	299.6	125	129	101	102
Rodgerson	86.7	89.3	83.3	88.2	99.2	99.0	92.5	88.8	64.3	62.1	296.2	294.7	161	134	105	103
J. P. Ellis	89.5	88.7	87.2	86.8	96.7	97.7	96.7	94.8	56.3	62.0	294.7	297.2	123	129	94	96
McKee	88.8	88.3	84.8	86.0	100.0	98.9	90.5	90.0	56.4	59.9	294.4	294.7	132	133	96	101
Teeling	88.0	88.2	84.2	85.9	100.0	98.5	92.8	90.7	62.0	61.0	299.5	298.3	128	135	91	104
McKelvy	83.1	87.1	77.1	84.4	96.0	97.8	93.3	89.0	62.0	60.5	304.3	298.8	122	129	96	97
Element	84.9	87.2	79.1	83.8	96.7	97.7	95.2	92.2	59.3	59.9	297.8	299.7	130	131	98	95
McLean	83.9	87.2	75.3	81.9	98.8	99.1	97.8	93.3	59.2	57.8	306.4	302.1	137	134	109	102
Johnson	85.4	86.4	77.9	82.2	97.5	96.1	94.4	97.0	52.3	60.2	294.5	296.3	136	131	102	101
Neil	89.2	86.1	89.2	86.1	86.3	83.7	98.8	96.8	54.6	56.3	289.3	294.4	130	133	100	105
Large	86.6	87.4	82.0	85.5	98.5	98.3	91.9	87.0	59.8	59.9	299.0	296.4	129	133	95	100
Medium	87.2	87.9	83.3	85.7	98.5	97.7	94.9	91.8	58.6	61.6	298.2	296.9	134	132	99	99
Small	85.9	86.5	80.1	83.1	98.2	97.9	94.9	88.3	57.6	58.3	298.4	299.3	131	133	102	100

By an arrangement of this sort, by simply changing the relative value of the different factors, it is possible to emphasize any particular phase of the work. The men willingly pay the greatest attention to the factor that has the greatest value because it gives them the better record and because they know the reason for the change. For instance, if it is desired to emphasize quantity, we give a larger value to the time record and a lesser value to the temperature record. Production is then somewhat increased at the expense of quality.

While I could give many illustrations similar to the one just given of our cooking operations, I will give only one final illustration of how economy progress records meet with equally great response. In the plant where this system was developed were employed over 1,200 men and perhaps half of these men had individual progress records and the rest came under some sort of group-progress record. Invariably the records proved themselves to be an incentive to greater productivity.

I could give many more illustrations of a similar nature, but this one is sufficient to illustrate the principle involved, namely, that it is a very simple matter to keep sufficient control records, which will much more than offset any variation in quality that might come from increasing the number of men. In fact, I do not hesitate to say that it has been demonstrated beyond any question of doubt that much greater uniformity is being obtained where the mills are working on a three-shift basis than where they are working on a two-shift basis.

Further Plans Contemplated

The paper manufacturers' experience with three shifts has convinced them that it is unquestionably a much more economical operation, from every point of view, than the two-shift method. They have learned that tired men do not make good workmen. It logically follows that wherever men are working seven days each week a way must be provided so that they have one day off. It is being proposed now to have an extra crew of men constantly at work to take the places of the regular-shift men, so that a systematic relief is provided. The method of doing this, however, depends upon the number of men and also upon certain local conditions. It is obvious that once employers work with their employees in bringing about an acceptable method this result can be easily accomplished. The employer, as a matter of fact, has everything to gain by making such an arrangement, for it is an extremely short-sighted policy to work tired men. When the plan of accumulating the half time of the men who work on Sundays on the day crew was first put into effect, we recognized that it was only the first step in arranging for full time off one day each week. We also recognized that the one day off in seven, in a continuous operation, was another logical step which should soon follow.

Suggestions for Other Industries Than the Pulp and Paper Industry

I would like to state at this point that my willing acceptance to talk to you on this subject is because of the fact that I realize what I say will be helpful to other continuous-process industries in solving this problem of changing from two to three shifts. Therefore, a recitation of the difficulties which we encountered will be perhaps as helpful as pointing out the advantages.

First, we had heard that men would not want the three shifts, but preferred the long hours. The results, however, proved that our men almost invariably welcomed the change to three shifts. There were a few men, such as foremen who prophesied difficulties, and there was occasionally some old man who had worked two shifts all of his life and gotten so in the habit of it that he preferred not to change; but I can say unqualifiedly that the change was enthusiastically welcomed by at least 99 per cent of our men, and the remaining one per cent were quickly convinced.

I have known, for instance, where the management has compromised with the men to such an extent that they were getting practically three-shift rates and still working two shifts, where the workmen objected to the cut in wages which must come. However, it seems to me inexcusable that the management should operate its plant in such a short-sighted way, *i.e.*, paying three-shift rates without getting the benefits that come from the shorter hours, which keep their men mentally and physically alert at all times.

Second, we argued ourselves into believing that the men would not know what to do with their time when off duty. We soon found, however, that by assisting in the creation of outside recreational facilities that this was not a problem at all; in fact, it became a big asset to us in developing *esprit de corps* in the community as well as in the plant. I do not mean that we adopted what is familiarly known as welfare work. I do not believe in this because of its paternalistic nature. However, when the men are encouraged to make their wants known and the company recognizes its responsibilities to the community as well as to its employees, it will not be long before the men will be actually creating the necessary means of recreation.

Third. We thought, at first, before we analyzed the situation carefully, that it would add fifty per