where mothers may take their infants and have them examined and treated, and, if it is considered necessary by the medical officer, they may be supplied daily with sterilized milk from these institutions. By way of supplement to the free medical relief, the relief committee has the power to make allowances of from 10 to 20 francs a month to women during confinement and for a period of twelve months afterwards.

No satisfactory statistics can be given for Paris alone as to the number of patients or the cost of medical treatment, as so many of the neighbouring communes take advantage of the Paris hospitals and the child relief service, but in the year 1900 it is calculated that medical relief proper cost £732,431, which included £680,549 for the cost of hospital treatment and £51,862 for home medical relief. It is thus evident that under this system there is the greatest tendency to draft patients as far as possible into hospitals.

In a future article the systems of Poor Law medical relief in other countries will be described.

A PRELIMINARY NOTE ON THE NUTRITIVE VALUE OF WHITE AND OF STANDARD BREAD.

By LEONARD HILL, M.B., F.R.S.,

Lecturer on Physiology, London Hospital Medical School.

CONSIDERING the public interest excited in this matter, and the paucity of exact experimental evidence, Mr. Martin Flack and I have carried out a research on rats. We chose rats because they are carnivorous animals and like man in this respect. We obtained as many young tame rats as we could and fed them for three weeks, some on white and some on Standard bread, and for a second three weeks on white or Standard flour. Both the bread and flour were obtained in a country town, from shops that supplied most of the inhabitants. The flours used for the bread were not the same as the flours we obtained from the corn merchant. The rats were divided into two lots of 25 each, and were kept under exactly the same conditions. The total weights of each lot were almost exactly the same at the start.

The rats were given bread or flour and water and no other food. At the end of three weeks we changed from bread to flour to see if the baking had anything to do with

the result we were obtaining, but found this made no difference.

The result is astonishing. From first to last the rats fed on white bread or flour have done far the worse. Ten of them have died, and five of these were eaten by the others before we could remove their bodies. In the last fortnight we have prevented any further cannibalism. Five of those fed on Standard bread or flour have died, and two have been eaten. The weather was very cold at first, and this partly explains the heavy mortality. The white lot stood the cold worse.

The tables show the great difference in the putting on of weight in 15 rats of each lot. The Standard have increased 27½ per cent., against 12 per cent. for the white in the last three weeks. At the end of the period the white 15 are nearly all losing weight. The white-fed rats are far less lively and less sleek in appearance.

It seems clear that either our Standard flours contained something essential to growth which was not in our white flours, or that the white flours contained something detrimental—for example, improvers.

We have tried another lot on white flour *plus* an amount of wheat germ about equal to that in Standard flour, and have found the results every bit as good as for Standard flour. It is highly probable that the germ, the growing part of the wheat grain, would contain amino-acid groupings essential for growth, and possibly bodies which activate the enzymes engaged in the digestion of the proteins of wheat. Treatment of the white flour may have destroyed these bodies.

Testing the pancreatic digestion of our Standard and white flours we find the Standard in every case gives us earlier the Adamkiewicz reaction for tryptophane, showing that this essential amino acid is split off earlier, and therefore is probably better absorbed in the intestine and utilized in the body.

Finally, we have tested on 15 individuals the acidity of a weighed quantity of Standard and white bread chewed in the mouth for two minutes. We have found no difference in this respect. It has been stated that the acidity of white flour is greater and leads to decay of the teeth. We cannot confirm this, at any rate, for the breads tested by us.

We are now doing controls on further groups of rats—three groups of 25 each, (1) whole meal, (2) standard, (3) white flour. The first week's weighings, just completed, show white flour markedly inferior, and whole

Fed on White Flour.
Weights of rats in grams.

Number.	End of Third Week.	End of Fourth Week.	Increase.	End of Fifth Week.	Increase.	End of Sixth Week.	Increase.	Total Increase.
1	91	108	17	120	12	120	0	29*
2	86	92	6	98	6	93	-5	7
3	84	87	3	93	6	93	0	9
4	81	82	1	88	6	90	2	9
5	76	81	5	82	1	80	-2	4
6	75	80	5	82	2	80	-2	4
7	74	76	2	78	2	74	-4	0
8	58	65	7	73	8	64	-7	8
9	57	64	7	65	1	63	-2	6
10	57	63	6	62	-1	63	+1	6
11	52	62	10	60	-2	60	0	8
12	50	54	4	60	6	59	-1	9
13	48	52	4	55	3	52	-3	4
14	46	50	4	52	2	50	-2	4
15	24	31	7	37	6	30	-7	6
	959							114

Percentage increase in fourth, fifth, and sixth weeks = 12.
* Probably the chief cannibal.

Fed on Standard Flour.
Weights of rats in grams.

Number.	End of Third Week.	End of Fourth Week.	Increase.	End of Fifth Week.	Increase.	End of Sixth Week.	Increase.	Total Increase.
1	96	105	9	119	14	127	8	31
2	90	95	5	109	14	118	9	28
3	87	89	2	108	19	113	5	26
4	83	87	4	98	11	104	6	21
5	80	86	6	93	7	93	0	13
6	77	86	9	90	4	93	3	16
7	76	84	8	88	4	92	4	16
8	72	75	3	80	5	90	10	18
9	57	68	11	76	8	82	6	25
10	52	66	14	68	2	76	8	24
11	52	57	5	62	5	68	6	16
12	50	57	7	61	4	67	6	17
13	49	54	5	57	3	65	8	16
14	48	51	3	55	4	56	1	8
15	45	51	6	47	-4	48	1	3
	1,014							278

Percentage increase in fourth, fifth, and sixth weeks = 27½.

meal the best. The results given appear so striking that we feel justified in publishing this preliminary note.

It seems clear that children of the poor, who are largely fed on bread and margarine or bread and jam, ought to have the Standard and not the white bread tested by us. How far the results are due to treatment of our white flours by "bleaching," etc., we are not able to say, and we cannot therefore generalize that all white flours are worse than Standard.

SEVENTIETH ANNIVERSARY OF THE PHARMACEUTICAL SOCIETY.

THE seventieth anniversary of the foundation of the Pharmaceutical Society is a matter of interest to medical practitioners, if only for the reason that much of the progress that has been made in pharmacy during the past seventy years has been due to its influence. Two generations ago the practitioner of medicine was handicapped in two ways—he could not depend absolutely upon the drugs which he prescribed or on the skill of the compounder. These two obstacles have been removed, and there has been brought into existence a large class of pharmacists, trained and educated to compound and dispense medicines, whose business it is to ensure the purity and, as far as is at present possible, the uniformity of the preparations dispensed.

At the beginning of last century the sale of drugs was subject to little or no control, and the business was carried on by a variety of traders, of whom the better class were mainly the descendants of those assistants who had been employed at the dispensaries founded by the physicians of an earlier generation as an outcome of the quarrel between themselves and the apothecaries. Included in the same class was a certain number of apothecaries who confined their attention to pharmacy rather than to medical practice. No organization existed, at that period, either for the protection of the trading interests of chemists and druggists or for the advancement of the art which they practised. An attribute which they possessed in common was objection to medical control, and this eventually constituted one of the chief bonds of union among them. One of the first attempts at organization was made in 1802, but met with little success. Eleven years later the chemists and druggists met for the purpose of considering what steps they should take to oppose a bill which had been promoted by the physicians; as an outcome of their opposition everything relating to the compounding of medicines by chemists and druggists was expunged from it. In 1841 they again had occasion to defend what they considered to be their rights, for a bill was introduced in the House of Commons which purposed to prohibit chemists and druggists from recommending anything for the cure of any disorder. A meeting was held at the Crown and Anchor Tavern, in the Strand, and so influential was the opposition made to the measure that the promoter eventually withdrew it. Some months later—on April 15th of the same year—another meeting was convened at the same place to consider the question of establishing a permanent organization. It was attended by about a hundred chemists and druggists, and the meeting unanimously resolved "for the purpose of protecting the permanent interests, and increasing the respectability, of chemists and druggists, an association be now formed under the title of the Pharmaceutical Society of Great Britain." On June 1st of the same year, another meeting was held at which William Allen, F.R.S., who carried on business as a chemist and druggist in Plough Court, was elected President. Allen was a man of considerable scientific attainments, and, what is more to the point, he was a very influential person. He was confidential adviser of Edward Duke of Kent, the father of Queen Victoria, a personal friend of Alexander I, Emperor of all the Russias, and was held in very high esteem by people who were in a position to help the newly-formed society. It was no doubt very largely due to the fact that he was president that the society made such rapid progress in the first few years of its existence. Before the society had been established two years it obtained a royal charter; this had a very important effect on the status of the society, for, by virtue of that charter, it possessed the power of regulating the

education and admission of members, and thus providing the public with qualified practitioners in pharmacy, at the same time establishing an ostensible distinction between the members of the society and unqualified persons. In September, 1841, the number of members and associates was 450 and when the first annual meeting was held in May, 1842, the number had grown to 1,958.

It is set forth in the Charter of Incorporation that the society was founded for the purpose "of advancing chemistry and pharmacy and promoting a uniform system of education of those who should practise the same, and also for the protection of those who carry on the business of chemists and druggists." Before attempting to pursue the first object it was necessary to furnish the means of accomplishing the second, and accordingly the School of Pharmacy was established early in 1842. Men of standing in the world of science were appointed lecturers, and the nucleus of the present system of education and examination was formed. Three years later a chemical laboratory was equipped, this being the first of the kind in our own country, and the equal of any which then existed in Germany or France. A library was also founded which has now grown to about 15,000 volumes, relating to pharmacy, chemistry, botany and allied subjects, and a museum was established, which has been gradually added to until it has become of great usefulness to students. By thus providing means for educating those engaged in the practice of pharmacy, the society laid the foundation on which have been built many of the most important advances in the pharmaceutical art that have been made since its practice was placed on a regular basis. The exchange of ideas was encouraged by periodical meetings of the members at which papers dealing with the preparation of drugs and their analysis and like subjects were, and still are discussed, and an official journal was established in 1841, by Jacob Bell, for the purpose of recording the society's transactions and facilitating the interchange of views of a nature likely to promote the advancement of chemistry and pharmacy.

The third object of the society, as set forth in the charter—namely, the protection of those who carry on the business of chemists and druggists, was more difficult of achievement; unlike the other objects, its accomplishment did not depend solely upon the efforts of the members of the Society, but upon the legislature. At the time of the foundation there was nothing to prevent any person from selling poisons, from using the title of pharmaceutical chemist, or from dispensing medicines, and the earliest efforts of the society, after arrangements had been made for educational purposes, were directed to obtaining powers from Parliament to remedy this irregular state of affairs. It was not, however, until 1852 that the first Pharmacy Act was passed, and this merely afforded protection, in the matter of titles, to those who had passed the Pharmaceutical Society's examinations. In the previous year, owing to the large number of deaths occurring annually from poisoning, of which more than one-third were due to arsenic, it had been enacted that this poison should not be sold by retail unless specified precautions were observed by the seller. The bill, as introduced in the House of Commons, at the instigation of the Provincial Medical and Surgical Association, the forerunner of the British Medical Association, with the concurrence of the Pharmaceutical Society, proposed to restrict the sale of arsenic to chemists and druggists and medical men, but this provision was deleted because the term chemist and druggist was not defined by law. Similarly when the bill, which in its amended form became the Pharmacy Act of 1852, was introduced, it embodied the principle of restricting the practice of pharmacy to pharmaceutical chemists, but, like all subsequent attempts to restrict the practice, it was not wholly successful.

Sixteen years later, after many abortive efforts, the society was at last successful in obtaining from Parliament an endorsement of the principle that the best method of protecting the public from the danger due to the indiscriminate sale of poison was by educating the vendors. Thus the Pharmacy Act of 1868 prohibited the sale by retail of scheduled poisons except by registered persons, and it also protected the title of "chemist and druggist." Since that time the weaknesses of that Act has been demonstrated, and contrary to the intentions of the promoters, the practice of pharmacy has been largely