paper. When careful observation discloses the causal relations of the different metropic states to glaucoma (if any exist), we shall be able to enlarge the field of our inquiry into the physiology of accommodation.

46 WEST THIRTY-SIXTH STREET, July, 1878.

ARTICLE IV.

ACTION OF PHOSPHORUS, ALKALIES, AND OF QUINIA ON THE GLOBULAR RICHNESS OF THE BLOOD. By ELBRIDGE G. CUTLER, M.D., and EDWARD H. BRADFORD, M.D., of Boston.

THE following few observations in a field of investigation which has hardly been worked upon may be of interest, supplementing the facts published in *The American Journal of the Medical Sciences* for Jan. 1878.

Action of Phosphorus on Healthy Subjects.—This drug is recommended by Dr. Brunton¹ as useful in pernicious anæmia. It has been used also in leucocythæmia. The following figures show its effect, in the healthy subject, upon the globular richness of the blood.

The number of globules in blood taken from the finger was

Red corpuscles . . .	3,311,984
White corpuscles . . .	4,737
Ratio of white to red . . .	1 to 690

Phosphorus .001 gramme was given three times a day, and increased gradually to .006 gramme. This caused diarrhœa and vomiting. The medicine was omitted for three days, and again taken in dose of .001 gramme *ter die*. Twenty-five days after the medicine was first taken, the count showed

Red corpuscles . . .	2,789,240
White corpuscles . . .	6,431
Ratio . . .	1 to 433

A marked *decrease* in the red and an *increase* in the white was noticed. The drug was not well borne, and caused gastric disturbance even when taken in the smaller doses. This was also the case when the drug was administered to a case of pernicious anæmia. The gastric disturbance caused by .001 gramme phosphorus given three times a day (in the form of sugar-coated pill) necessitated in four or five days the discontinuance of the medicine. There was no improvement in the general symptoms. There was an increase in the globular richness after the medicine had been given four days, but as diarrhœa was caused by the phosphorus the increase in the globular richness could not be considered anything more than a physiological change.

In a case of leucocythæmia the drug caused gastric disturbance and diarrhœa. There was a slight increase in the globular richness during the exhibition of the phosphorus which was probably due to the diarrhœa.

¹ Practitioner, 1875.

To return to the case of the healthy subject who took phosphorus, several weeks after discontinuing the drug the globular richness was

Red corpuscles	. . .	3,249,600
White corpuscles	. . .	5,754
Ratio	. . .	1 to 564

Action of Alkalies on Healthy Subjects.—M. Pupier¹ reported the following experiment as a proof that the number of red corpuscles increases under the action of alkalies.

A dog was given 87 grms. of bicarbonate of soda daily (as Vichy water); there was no loss of weight.

The red corpuscles rose from	. . .	4,239,000
to	. . .	5,910,000
and fell after stopping the alkali in twenty days to	. . .	4,480,000

A repetition of the experiment gave a similar result. M. Pupier was led to this investigation by the fact that the red corpuscles in a man who had taken for a fortnight 16–20 grms. of bicarbonate of soda a day amounted

to 5,406,000

That alkalies increase the number of red corpuscles is contrary to the opinion generally received.

The blood from the finger of a healthy male adult showed the

Red corpuscles to be	. . .	3,804,700
White corpuscles to be	. . .	4,062
Ratio	. . .	1 to 937

Bicarbonate of soda 4 grammes three times a day was taken daily, and in eight days the count showed

Red corpuscles	. . .	3,344,380
White corpuscles	. . .	3,713
Ratio	. . .	1 to 903

Bicarbonate of potash was substituted for soda, and one week later the

Red corpuscles were	. . .	3,561,020
White corpuscles were	. . .	3,385
Ratio	. . .	1 to 1,050

Bicarbonate of soda again used. One month later an examination of the blood showed the

Red corpuscles to be	. . .	3,555,604
White corpuscles to be	. . .	6,973
Ratio	. . .	1 to 515

The alkali was discontinued. One week later it was found that the

Red corpuscles were	. . .	3,696,400
White corpuscles were	. . .	4,365
Ratio	. . .	1 to 869

There had been some slight dyspeptic symptoms while the drug was taken.

There was therefore a slight *decrease* of the red corpuscles, and a slight *increase* of the white.

In a second case the result was the same; the figures, however, were mislaid.

Action of Quinia on Healthy Subjects.—Bulgak² reports that a contraction of the spleen could be brought about by injections of quinia into

¹ Acad. des Sciences Comptes Rendus, lxxx. p. 1148, 1149.

² Quoted in the Dublin Journ. of Med. Sci., Oct. 1876.

the veins, causing also an increase in the number of the white corpuscles in the splenic vein. Ergot had no effect.

We noticed the following variation in the globular richness during the administration of quinia.

Globular richness of a healthy male adult at 2 P. M., half an hour after a slight lunch.

Red corpuscles	.	.	.	3,249,600
White corpuscles	.	.	.	5,754
Ratio	.	.	.	1 to 566

The next day at 10 A. M. .97 gramme quiniæ sulph. was given, causing, from 1 to 3 P. M., a slight effect upon the nervous system. Half an hour after a lunch (the same as on the previous day) at 2 P. M. the count was

White corpuscles	.	.	.	8,300
Red	"	.	.	—

The red corpuscles were not increased, the exact figures, however, were mislaid.

On the next day 1.29 grammes quiniæ sulph. were given at 10 A. M., and at 2 P. M. the effects of the drug, *tinnitus aurium*, slight giddiness, some nervous excitement, were quite marked. An examination showed the

Red corpuscles to be	.	.	.	2,978,600
White corpuscles to be	.	.	.	12,186
Ratio	.	.	.	1 to 245

On the next day no quinia was taken; lunch at the same time; at 2 P. M. the

Red corpuscles numbered	.	.	.	3,422,902
White corpuscles numbered	.	.	.	5,575
Ratio	.	.	.	1 to 613

The habit of life during these four days was exactly the same; the lunch was exactly the same.

We have made no special investigations of the effect of quinia given in diseased conditions. In one case of syphilis which we observed there was a marked increase in the red corpuscles, 1,043,130 under the administration of *eichonæ* sulph.

There was therefore in health a slight *diminution* in the number of red corpuscles, and a marked *increase* in the number of the white after the administration of a large dose of quiniæ sulph.

ARTICLE V.

PAROTIDITIS, OR MUMPS; A THEORY OF ITS ETIOLOGY, AND THE RATIONALE OF THE SECONDARY MANIFESTATIONS, OR SO-CALLED METASTASES. By A. B. ISHAM, M.D., Professor of Physiology in the Cincinnati College of Medicine and Surgery.

PAROTIDITIS, or mumps, is a disease which primarily affects the parotid gland, usually first upon one side, and in a day or two extending to the other. Both glands, however, not uncommonly become involved at the same time; or, more rarely, one gland only may be attacked, the other remaining unaffected until another disease visitation. Consecutively, the