that will enable us to make a diagnosis of retrolabyrinthine instead of labyrinthine trouble. The indications for operation may depend on this, as well as the results of operation and treatment.

DR. C. F. WELTY, San Francisco: Recently in San Francisco there were reported several cases of cerebellar tumor, and the reporter called attention to the associated symptoms of hearing, nystagmus and tinnitus. I did not see any of those cases, but it is so comparatively easy at the present time to make a diagnosis of a small brain tumor that these things ought to be better understood. The ears show definite findings. I will relate two cases which I have seen within the past two weeks. One was a man of 45 with nystagmus more to one side and increasing headache. On examination he had a vestibule that did not react, and a cochlea that was away below that of the other side. This asymmetry was beautifully illustrated in his case, and the equilibrium disturbances were quite in keeping. In the second case, a man had a furuncle on the outer part of the ear. Three days later he vomited and was compelled to go to bed. He had nystagmus and a complete facial paralysis. His vestibular apparatus was intact. By the use of hot water, his nystagmus was brought back to the same side to as great extent as the opposite side. Either one of two things must be present—a luetic tumor or an abscess. It is essential to study these cases carefully.

THE HYGIENE OF THE SWIMMING-TANK

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Artificial swimming-pools have been regarded with skepticism by the fastidious, but the possibility of infection of the water by typhoid carriers brings to the fore a more important question. Colleges have been concerned for the safety of their students mingling in a common bath, and the same conditions prevail in club and public swimming-tanks in most large cities. Swimming as an indoor and winter sport is popular and deservedly so, but at present the popularity of swimming-tanks is ahead of their hygiene.

That typhoid might be acquired in them would seem possible, as water is taken into the mouth at times and sometimes unintentionally swallowed. While usually the organisms found in these tanks will be only those normal to the water supplying them and those likely to be introduced, some pathogenic organisms have been found. Studies less complete than were planned were made during the year at the large modern gymnasium of the University of Pennsylvania with the permission of Dr. Tait McKenzie, in charge of that department. These were principally to learn the deterioration of the water during the week it was used, as measured by the increase in the bacterial content; other observations were, however, also made.

The tank there holding 155,000 gallons is frequented by a large number of students every day but Sunday; bathing begins about 9:30 a. m., and continues into the evenings, the afternoons finding a large number present. The water supplied is from the city mains, having passed through the city filters, but again passed through a patent rapid filter with alum as a coagulant. It will be observed that the second filter is of lower bacterial efficiency than the first. Fifteen hundred gallons were allowed to flow through the tank daily. Every Sunday it was emptied, scrubbed out and then refilled with fresh water.

Samples of water from the main after passing through the local filter, and from the tank, with 1 to 100 dilutions of them, were plated on agar and gelatin. A series of maltose plates was also carried. The samples

from the tank were taken daily, the others every other day. Some gas-developers were found, and *B. pyocyaneus* was isolated by Dr. John A. Johnston, who made part of these observations. A summary of the counts for the week appears in Table 1.

TABLE 1.—SUMMARY OF BACTERIAL COUNTS MADE ON PLATES OF AGAR AND OF GELATIN AFTER TWENTY-FOUR AND FORTY-EIGHT HOURS *

Day	Tank	Main	Filter
1	85	25	...
2	340	..	170
3	428	..	7
4	3,000	5	8
5	7,000	..	4
6	50,000	30	20

* Water from three sources, plated in three dilutions—from Monday to Saturday, inclusive. Agar incubated for twenty-four hours.

Some weeks later we undertook to destroy by means of chlorin the organisms in the water, following the published experiments carried on at Brown University. In the first attempt 16 pounds of chlorinated lime, guaranteed 30 per cent. available chlorin, was mixed with half a barrel of water and two-thirds of the supernatant fluid bailed out and thrown into the tank, the inflowing supply of 1,500 gallons per diem being cut off for five days. Table 2 summarizes the result.

TABLE 2.—SHOWING NUMBER OF COLONIES ON AGAR-AGAR PLATES OF WATER FROM TANK BEFORE AND AFTER TREATING IT WITH CHLORIN

Tank Water *	Hours	Undiluted			1-100 Dilution		
		1 c.c.	2 c.c.	1 c.c.	1 c.c.	2 c.c.	1 c.c.
Before adding chlorin solution....	24	10	880	504	0	5	3
Before adding chlorin solution....	48	500	850	875	0	5	10
15 minutes after adding chlorin...	24	0	0	0	0	0	0
15 minutes after adding chlorin...	48	0	0	0	0	0	0
45 minutes after adding chlorin...	24	0	0	0	..	..	..
45 minutes after adding chlorin...	48	0	0	0	..	..	..
2 hours after adding chlorin.....	24	0	0	0	..	..	..
2 hours after adding chlorin.....	48	0	0	0	..	..	..
24 hours after adding chlorin.....	24	0	0	0	..	..	..
24 hours after adding chlorin.....	48	0	0	0	..	..	..
48 hours after adding chlorin.....	24	0	0	0	..	..	..
48 hours after adding chlorin.....	48	0	0	0	..	..	..
96 hours after adding chlorin.....	24	50,000 per c.c.	..	..	..	..	..
96 hours after adding chlorin.....	48	50,000 per c.c.	..	..	..	..	..

* Counts were made at twenty-four and forty-eight hours, being incubated for the former period. Plates were made up with 1, 2 and 1 c.c. of water. The figures show number of organisms calculated to 1 c.c.

Some calcium carbonate was present when the solution was put into the tank, due largely to the crude method of preparation, changing the color of the water sufficiently to be generally remarked; some bathers stated that the water "tasted" and that they smelled something; however, this was not sufficient to be unpleasant nor was it remarked after a few hours.

In the second attempt a much smaller amount of chlorinated lime was used; it was desired to use about one part of available chlorin to two million (1-2,000,000). Exactly 3 pounds of the same chlorinated lime

were weighed and placed in a tin "boiler" containing four buckets of water, which was well stirred and then allowed to settle. Three bucketfuls of the supernatant liquor, which was much less discolored, were siphoned off, and added to the water in the tank. Nothing was remarked by the bathers who shortly after entered the tank, nor was any change in the color of the water observable. Table 3 shows the result of the count on agar for twenty-four hours. It will be noted that this observation was made in the latter part of a week, when the count is high, as is shown in the first table. Readings of the amount of the chlorin in the water at the time the samples were taken are shown.

The calculated amount of chlorin used in the last experiment is believed to be less than is considered safe to add regularly to render some waters potable. Public swimming-tanks should be under the supervision of local health authorities in the same manner that the ventilation of public buildings is.

TABLE 3.—SHOWING THE NUMBER OF COLONIES ON AGAR PLATES OF WATER FROM THE SWIMMING-TANK

Tank Water *	Hours	Undiluted			1-100 Dilution		
		1 c.c.	2 c.c.	1 c.c.	1 c.c.	2 c.c.	1 c.c.
Before adding chlorin.....	24	50,000	∞	∞	3,125	6,250	6,000
Before adding chlorin.....	48	50,000					
15 minutes after adding chlorin.....	24	250	260	500			
15 minutes after adding chlorin.....	48	350	600	312			
2 hours after adding chlorin.....	24	0	0	0			
2 hours after adding chlorin.....	48	0	0	0			
24 hours after adding chlorin.....	24	100	370	500			
24 hours after adding chlorin.....	48						

* Thursday was the day on which this observation was made, when, as is shown in Table 1, the number of organisms is much greater than on Monday, when the tank is first in use. Counts are calculated to 1 c.c. The amount of chlorin is approximately 1-2,000,000.

TABLE 4.—RELATIVE READINGS FOR CHLORIN IN WATER BEFORE AND DURING THE FOREGOING OBSERVATIONS

100 c.c. Sample of Water	Contains of Chlorin, mg.
Before adding chlorin.....	1
15 minutes after adding chlorin.....	1.2
2 hours after adding chlorin.....	2
24 hours after adding chlorin.....	1.1

CONCLUSIONS

1. Pathogenic organisms may readily find entrance to the water in swimming-tanks by means other than the water-supply, and possibly cause disease.
2. There is a large increase in the number of organisms normal to any particular water, as well as of others, during the period that water is held in the tank.
3. All of these organisms are quickly destroyed by small amounts of chlorin, readily added to the water in the tank every morning before the usual hours of use.
4. The accumulations of hair and other debris observable at the bottom of the tank should be removed daily by small hand pumps, these accumulations affording a favorable nidus for the development of certain organisms and being less readily disinfected than the water.
5. The hygiene of the tank is aided by the construction of troughs at the edges to afford places for expectation and to prevent water draining back into the tank from the sides. A shower bath should be used before a swimmer enters the common tank.

A NEW OBJECT TEST-CARD, OR KINDERGARTEN CARD FOR VISUAL TESTS

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With the increasing practice in the primary grades of the public schools of America of teaching children to read without teaching them the alphabet, the ophthalmologist is confronted with new difficulties in estimating the vision of young children who are brought to him for suspected refractive errors.

During recent years a number of object test-cards have been devised, each one having its own peculiar value. At the time they were introduced their main purpose was to give some idea of the vision in the eyes of very young children with strabismus. This will remain the chief function of all such cards for some time to come, as the three vital facts to be learned in every case of strabismus are the vision, the degree of deviation and the refractive status. Without some idea of the vision in each eye of the young strabismic children (3 to 6 years old), no satisfactory study may be made of such a case. But as I have said, these cards have found a new field of usefulness in the last four or five years and they bid fair to become more and more popular.

The chief points in the construction of any object test-card are that (1) it shall consist of objects readily recognized by little children; (2) the objects should conform as nearly as possible to the accepted scientific standard by subtending the correct angle for a distance of 6 meters. I doubt whether an absolutely scientific object test-card, in the sense just mentioned, will ever be constructed. In the very nature of things, they will have to be approximations. Our main purpose must therefore be to make them the closest approximations possible. This idea was evidently prominent in Dr. Thorington's mind when he brought out his object test-card some years ago, which I have employed with much satisfaction. Some of the objects figured on his card I have used on the one herein illustrated—indeed it would be hard to construct an object test-card to-day without drawing to some extent on the two or three that are already before the profession. No claim for originality is made for this card.

To analyze somewhat the card now shown, the first three objects (the dog, the horse and the cat) are of value because they are almost immediately recognized by even very young children. They can never be made to correspond exactly to the 5-minute or 6-minute angle, but, because of their size, only a small equation of error is likely. The remainder of the objects figured lend themselves more completely to the correct angular construction. The circle or ring is of value in estimating

A new object test-card, or kindergarten card for visual tests.