searches which led Ehrlich to the discovery of the remedy. The animal parasites causing malaria, syphilis, etc., apparently cannot be successfully attacked by immune sera. Hence the search for substances which would attack the parasites without injuring their host. In this line of investigation about 630 substitution products have been made and tested, of which only four gave promise of value, possessing the required parasitotropic properties without at the same time being injurious to the organs of the host. These substances are: acetyl-atoxyl; arsenophenyglycin, or "418," trypanosan, and arsenobenzol, or "606." Excepting the drug trypanosan, arsenic is the acute principle in all the preparations, the other chemical groups present merely serving to fix this substance to the parasite. Thus for example, it has been found that the acetyl group has a special affinity for trypanosomes, and the amino and hydroxyl groups in especial affinity for the spirochetes. Of course this could only be determined by animal experiments, and after the discovery that syphilis could be transferred to the lower animals, the end became the discovery of a drug which in a single dose would destroy all the parasites without injuring the host, and this has apparently been accomplished with "606." Patients who have resisted the action of mercury, or who could not from idiosyncrasy use it, have improved at once under the use of "606" to which no special idiosyncrasy has as yet been observed. The drug is described as a yellowish powder rapidly oxidizing in the air and hence put up in vacuum tubes. It dissolves in water with difficulty, making a strongly acid solution which is very painful on injection. Hence the substance is administered either as a neutral or as an alkaline salt. The administration is by injection deep into the muscle or veins, or beneath the skin. At present it is recommended that the administration be subcutaneous. "According to this method, the drug, in a dose which has varied up to the present from 0.3 to 0.6 grams, is dissolved in a mortar in from 1 to 2 c.c. of or-

dinary solution of sodium hydrate. Acetic acid is then added, drop by drop, until the base precipitates out in the form of a fine yellowish suspension. This precipitate is collected in from 1 to 2 c.c. of sterile distilled water, and there is added either 1-10 normal sodium hydrate, or 1 per cent acetic acid, as needed, until the reaction becomes precisely neutral to litmus. According as the reaction is or is not accurately neutral, the injection will be followed by much, little or no pain. It is moreover desirable to subdivide the precipitate as finely as possible, which can be done by rubbing. The suspension is then drawn into a suitable syringe and injected subcutaneously below the shoulder blades after previous cleansing and disinfection of the part. It often happens that there is slight pain lasting a few minutes following the injection, and in some instances a slight swelling arises on the second or third day following the injection, but no bad effects are produced. There may be slight rise of temperature and in some instances an urticarial eruption has occurred, but no specific toxic effects on the eyes, kidneys, or nervous system have been observed." The authors report their personal observations in detail. Fourteen patients received the injections and the results are also given in tabulated form. In two cases the doses were too small, but the other twelve have apparently got rid of the parasites and there has been no relapse in four months, all the Wasserman reactions remaining negative. None of the patients received more than 0.3 grams and the first two much less. This is about half the dose now being used abroad, 0.6 grams being found non-toxic to man. The final word in regard to the drug will not be said probably for some years, but the authors say the fact remains that we have no drug the extraordinary effects of which in syphilis equals that of "606." The article is illustrated.

BACTERIOLOGY OF ACUTE RESPIRATORY INFECTIONS IN CHILDREN.

L. Emmett Holt, New York (*Journal A. M.*

A., October 8), publishes his more recent studies on the bacteriology of the acute infections of the respiratory tract in children. In a previous paper he had pointed out that the *Bacillus influenzae* played an important part in respiratory infections, especially in winter and early spring, but disappeared during the warmer months. He has somewhat enlarged his research, and included observations on the occurrence in the respiratory tract secretions of the pneumococcus, influenza bacillus, the staphylococcus and streptococcus. The diphtheria bacillus and *Micrococcus catarrhalis* are not included, though they were noted when present, and a detailed report prepared in regard to the latter. Between September, 1909, and June 1, 1910, he made over 1,100 cultures from 500 patients and thirty nurses and attendants; also cultures from lung and heart blood in eighty-five routine autopsies. The patients were from the Babies Hospital, and mostly under 3 years of age, and the results are given in tabulated form. Four groups of patients are included: (1) those with pneumonia, mostly of the acute primary type, bronchopneumonia predominating; (2) those with bronchitis and other respiratory infections, for the most part mild; (3) those with pulmonary tuberculosis; (4) those with non-respiratory diseases, and included in this group are thirty nurses and attendants. Pure cultures were never seen, though a dominant one was present in many cases. In all the groups in fact, the predominance of the pneumococcus and of the *Staphylococcus aureus* is notable, while the *Bacillus influenzae* percentage is considerably less than that of the preceding season. The streptococcus was rarely predominant, though occurring usually in small numbers in over half of the patients and in one-third of the cultures taken. That the character of the infection in bronchitis is essentially the same as that in pneumonia is not generally appreciated. In the second group, of mild cases, the relative frequency of the different germs in cultures was about the same as in the first group, except a little larger percentage of in-

fluenza cases. In the tuberculous cases the percentage of influenza is still higher, while the pneumococcus and staphylococcus predominate. In the non-respiratory cases the staphylococcus was found in about 85 per cent and the streptococcus in about half that number. It is worth noting that 52 per cent of the patients showed that pneumococcus and the proportions of influenza fell the lowest of any of the groups. He has appended the results of cultures from fifty-seven cases of acute otitis. About half of these patients showed the influenza bacillus in throat cultures, but only four of them showed it in ear cultures. With the mixed character of the infection in all these cases, it was often impossible to connect the clinical symptoms with definite findings. There were very few cases of typical acute pneumonia, and there was no definite modification of the symptoms observed with the presence of the streptococcus, except in a few cases of exceptional severity. The influenza bacillus seemed to complicate and cause irregularities when it occurred, and several fairly distinct clinical types were associated with it, which are described. It was more frequently associated with symptoms of the lower than of the upper respiratory tract and, in general, mild general symptoms, irregular physical signs and marked temperature variations. A number of cases are reported. Holt thinks that the influenza bacillus plays a considerable role in the respiratory diseases of young children. He is more doubtful of the influence of the streptococcus and the staphylococcus, but reports a case which made quite an impression on him, of bronchopneumonia with otitis apparently cured by staphylococcus vaccine. The necropsy findings correspond with the clinical findings by sputum cultures in the main. The mixed infections were found in a great majority of cases. In conclusion, he rather emphasizes the significance of repeated findings of the bacillus influenza in sputum cultures, in the winter and spring season at least.