PRELIMINARY REPORT ON THE PRESENCE OF ARSENIC IN CIGARETTES.

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It has long been known that arsenic is often present, sometimes in large quantities, in wall papers, advertisement cards, artificial flowers, bookbindings, and many articles in ordinary domestic use. It is also known that when arsenious acid is inhaled even in minute quantities for a considerable period of time it produces cough, expectoration, hæmoptysis, loss of flesh, and other symptoms which are readily mistaken for commencing phthisis.

It was from the investigation of a case of this description in a medical student who was a persistent smoker that I was led to suspect the presence of arsenic in the coloured wrappers in which cigarettes are sold. Finding it necessary to undertake a systematic examination and to test a large number of specimens, I availed myself of the co-operation of my colleague, Dr. Wilson Hake, the Lecturer on Practical Chemistry at the Westminster Hospital, who has conducted a large number of experiments bearing on the subject.

The tests on which the chief reliance was placed were Reinsch's and Marsh's, but these were checked by other tests. In some instances as many as a dozen different examinations were made of the same brand, so as to avoid the possibility of error from want of uniformity in the specimens themselves. When the papers were of complex design or printed in more than one colour different portions of the wrapper were examined separately. When there was an "insert," such as a picture painted in colours, that too was submitted to examination. Most of the tests were applied to the wrappers of cigarettes, but some specimens of tobacco, both in cases and in tins, were examined.

It may be said at once that the colour of the paper affords no indication as to the presence or absence of arsenic. It is usually supposed that papers coloured green are most likely to contain arsenic, but many green papers are free from it. This point is illustrated by the following experiments:—

B. Cigarettes	... Vivid green paper	... No arsenic.
G. Tobacco	... Bright bluish-green packet	...
Q. Cigarettes	... Bright pale green case	...
R. Cigarettes	... Bright green case	...

This should be compared with the following list:—

A. Tobacco	... Bright green wrapper	... Contained arsenic.
C. Cigarettes	... Bright green wrapper	...
D. "	... Bright green case	...
S. "	... Pale green, dark blue, and buff wrapper	...
E. "	... Very pale bluish-green wrapper	...
H. Tobacco	... Light medium blue label on tins	...

None of the specimens in the following list were green, and the absence of arsenic is deserving of note:—

F. Tobacco	... Bright yellow paper	... No arsenic.
K. Cigarettes	... Paper blue, red, yellow, and gold	...
L. "	... Blue, buff, and white check case	...
M. "	... Case of white glaze and blue satin	...
N. "	... Blue, white, and gold case	...
O. "	... Blue, white, and gold	...
P. "	... Blue, white, and gold	...

From these lists it will be seen that out of seventeen series of different kinds of cigarettes and tobaccos arsenic was present in the labels of six, or more than a third.

It may be mentioned that both Reinsch's and Marsh's tests are very delicate, and that the latter is rather more delicate than the former. Reinsch's test, however, will detect $\frac{1}{100}$ grain without difficulty. The arsenic when detected was present in such large quantities that there was no difficulty in demonstrating its presence.

I am told that in the trade the term "wrapper" is applied to the outside leaf of a cigar, which contains the "fillings," and that the "wrapper" of a cigarette is the rice paper in which the tobacco is rolled. The term wrapper in this paper is applied to the coloured case or paper in which packets of cigarettes are sold. I do not suppose for one moment that arsenic is intentionally introduced into tobacco or cigarettes, or that it is added to the rice paper to make it burn, but it is obvious that it must be employed by the paper manufacturers on a very large scale. The use of arsenic for colouring paper

is prohibited in Germany, but there is no law against it in this country.

The presence of arsenic in the wrappers of cigarettes must be attended with considerable risk to the smoker, for the colouring matter easily rubs off on to the fingers, especially when moist, and from the fingers on to the cigarettes. Most packet tobaccos are put up by machinery, but the papers are spread by girls, who must of necessity in the course of their work absorb a good deal of arsenic. The danger is both to the consumer and to those engaged in the manufacture of cigarettes. The presence of arsenic is by no means confined to the cheaper brands, for it occurs abundantly in many of the high priced packet cigarettes. Moreover, the use of arsenical paper is not confined to cigarettes which are imported into this country, some well known British firms employing it extensively.

The rice papers which form the wrappers for the cigarettes and the tobacco itself has been examined, but this series of experiments is not yet sufficiently advanced to admit of publication.

THE BATTLE OF THE CLUBS.

THE COVENTRY PUBLIC MEDICAL SERVICE.

SIR,—Noticing in the BRITISH MEDICAL JOURNAL the frequent accounts of the "Battle of the Clubs," I thought it would not be out of place for me to give you a short account of the workings of the Coventry Public Service, the third annual meeting of which has recently been held.

Three years ago Coventry was in the anomalous position of having nearly 26,000 people in a provident dispensary out of a population of 52,000. This dispensary had no wage limit, and, apparently, anyone applying for admission was taken in at the following rates: Adult members and others over 12 years of age paid 1d. per week, the first four children paid $\frac{1}{2}$ d. each per week, and any others (under 12 years) were accepted without further payment, so that father, mother, and all children under 12 years were accepted for the low fee of 4d. per week. For this medical and surgical assistance with medicines were to be supplied.

The annual report of this dispensary for 1892 showed that the contributions of the members amounted to £2,907 1s. 8d., out of which the doctors were paid the sum of £1,723 4s. 5d., leaving £1,183 17s. 3d., to be spent in expenses. A rule existed in this dispensary that the doctors attached to it should not meet in consultation other practitioners in the town upon dispensary cases, which rule was obviously unfair to the patients and the other medical men.

In addition to this dispensary private clubs and benefit societies existed. In order to substitute a more satisfactory state of affairs a public medical service was established on May 1st, 1893, and all the medical practitioners in the town were invited to join, two only holding themselves aloof, with the exception of the six dispensary men. I might add that the dispensary men were very cordially invited to join, but refused, their great objection seeming to be the fear that other men would be imported into the town.

One of the objects of the public medical service was to sever connections with medical aid associations, and do away with the few private clubs existing, at the same time giving the chemists of the town the dispensing. The National Medical Aid Association was first relinquished, and immediately that Society sent a qualified medical man to reside in Coventry and take over the work. This man was a Doctor of Medicine of the Royal University of Ireland, to which body a protest was addressed pointing out the manner in which one of its graduates had transgressed the ethics of his profession. A courteous reply was received stating that the University could take no action in the matter. A large branch of the Star Benefit Society was next relinquished, and was promptly taken over by the dispensary.

The public medical service was started by each of the eleven medical men subscribing two guineas as a guarantee fund; a collector was appointed who was forbidden to canvass; patients were to pay 1d. per week for each member, child and adult; a wage limit of £2 per week was to be strictly enforced; and the chemists of the town were to do the dispensing.

The guarantee was returned at the end of the first year, since which time the service has been able to pay the doctor