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Sri A. N. Rai, I. P., the Second Editor of the Madras Police Journal and Principal of the Police Training College, Vellore, from 13-4-51 to 25-1-52 now District Superintendent of Police, Tirichirapalli.

EDITORIAL.

In addressing a conference of Police Officers at New Delhi on 17—3—1952 the Home Minister to the Govt. of India, Dr. Kailash Nath Katju, suggested that bringing out a Police Magazine containing records of true cases covering investigation and detection of crimes would help the growth of detective literature in the country and it would be immensely useful to the Police Force. The experiences of a successful and efficient police officer will always provide ample materials for such valuable contributions to our journal. Lucid accounts of such experiences will be interesting and the contributors, by their comments and constructive ideas, can make them educative as well. The object of the journal is to contribute to the development and betterment of Police work and technique and to make the journal the clearing-house for new ideas. The Editor thanks the contributors for the articles published in this issue and requests the co-operation of Police Officers of all ranks, who have the ability and gift to write, to record their constructive ideas for publication.

Publication of short notes on Current topics will be a new phase in the career of our journal from the next issue. This will throw open to our contributors a wider field for communicating their varied experiences and will include notes and information on all aspects of Police work within and outside the province. Such contributions are looked forward to.

M. BALAKRISHNA MENON,
Principal, P. T. C., Vellore.

POLICE AND THE PRESS!

BY SRI V. R. RAJARATNAM, ~~B. A.,~~ I. P.,

INTRODUCTION.

The Police State of the past.

Before India became a Republic, all talks of the relationship between the Press and the Police were seldom heard. This was because India was a Police State in which law enforcement was made with extreme rigour, and the question of friendly relations with the people was never viewed as a matter of policy in Police administration.

The ideal of the Welfare State.

The ideal placed before the people of the Indian Republic is a Welfare State, where the Police have to be the watch dogs against all disruptive forces noticed in this country. This important role can be played by the Police only if the development of the public attitude favourable to the accomplishment of the ideal of the Welfare State exists at all times.

Basis of Public co-operation.

The attitude of the people towards the Police is moulded by the day to day experiences they have in being served by the Police. Every policeman therefore unconsciously plays a major role in creating public reaction towards the Police, be it for good or bad. Public co-operation is essential for the successful accomplishment of the work to be done by the Police. While the Police themselves are the most important factors in creating public attitudes, there are other influences which are contributory factors. In this latter respect, the Press exerts a powerful influence in moulding public opinion.

2. THE POINTS OF VIEW OF THE POLICE AND THE PRESS.

Antipathy of Police against Press in the past.

The reason why in the past there had not been very cordial relations between the Press and the Police are worth examination. In those days, through misrepresentation, the Press had created an attitude, which was unfriendly and unfair to the Police.

Publication of accounts which are unfair and malicious.

It published accounts that destroyed public confidence in the Police, and thereby prevented the creation of a desirable support between the Police and the public. Occasionally the Police were the victims of unfair and sometimes malicious press attacks. The Police are always in a vulnerable position in relation to the Press. They deal with human beings. Such being the case, it was easy for the Press to criticise every police act, and obtain a sympathetic support from the citizens, who were subjected to the Police control. The Police, therefore, were always antagonistic to the Press, because, in addition to publishing unfair reports based on inaccurate information, the Press indulged in publishing facts which should have been kept away from the Public, to enable the Police to carry on successful investigation of cases.

Publishing of facts which should be kept from the public.

While the Police do not wish to have the names of victims and witnesses mentioned in newspaper reports, which should be concealed for purposes of investigation, they were constantly being made public in newspaper accounts. In addition, persons desirous to see their names in print, used to rush up to the Press with information, instead of furnishing that information to the Police in charge of the actual investigation. Further, Press reporters overdid their functions, publishing fantastic accounts to catch the public attention. The Police naturally were vexed at the uninformed criticisms made against

their methods and operations published in newspapers. The Police have no means to answer them, and thus the police prestige was ruined, and that hindered their work. It was not uncommon when often times the Police Force as a whole was violently criticised for a single blunder committed by one officer.

Antipathy of the Press against the Police in the past.

The Press, on the other hand, have been against the Police. They contend that the attitude of the Police towards them is unfriendly. They argue that the faults or the wrong reports appearing in the Press are due to no proper information being furnished to them by the Police, which in no small measure is due to the antipathy of the Police towards the Press, and the failure on the part of the Police to comprehend the mission of the Press.

The common aim of both the Police and the Press.

These mutual criticisms should be analysed by both the Press and the Police, now that both are engaged in the common purpose of serving the people of a Welfare State, which can be done only by mutual understanding and co-operation between themselves.

3. NECESSITY TO KEEP THE PRESS INFORMED.

How a good press can assist the Police.

Because of its influence on public opinion, the Press that has a genuine interest in the public good, can assist the Police in the improvement and quality of their service. Amicable relationship with the Press will also afford many other advantages to the Police. Newspaper facilities can, with advantage, be used for reporting departmental activities to the public, informing them generally of departmental programmes and procedures, enlisting their assistance in crime, and traffic control problems, and educating them in methods adopted to minimise opportunities for accidents and for the commission of crime.

Policy of the Police towards the Press.

The Police should, however, adopt a policy of complete fairness in all their relationships with newspapers and their representatives. By mutual contacts, the Press and the Police should endeavour to make the duties of one another easy and helpful. Misunderstandings usually occur because of the ignorance of mutual needs and duties. Periodical meetings of Press representatives and higher Police Officers could lead to better relations. By such contacts, a code of ethics, which both the Press and the Police should follow, can be evolved and adopted.

Police to be the source of information to the Press.

One of the rules of conduct which should be universally followed is that the Press representatives must rely on police sources for their news. Instructions to this effect have already been issued in this State, enjoining on the District Superintendents of Police the importance of informing the Press representatives promptly of important occurrences, so that a correct account of them may be published in the Press. Thus a policy has already been established in this State, in the matter of the accessibility to the Press of such information. Information that should be withheld should be only such as will relate to national security, matters which are before Courts and therefore sub-judice, names of juvenile offenders and victims, names of female victims in sex crimes and other facts, the public knowledge of which might interfere with crime investigation or the apprehension or interrogation of suspects. It should be the policy of the Editors also not to publish these matters, even if information about them is made available to them from other sources.

4. POLICE PROPAGANDA.

Need for Police propaganda.

In spite of all that is done, it may so happen that a part of the Press may not co-operate with the Police at all times or in all matters.

Therefore a certain amount of propaganda is necessary on the part of the Police themselves. In this State, this publicity has been made possible through certain departmental publications ;

Publication of Weekly C. & O. Sheets.

(i) *Weekly Crime and Occurrence Sheets* : The publication of weekly Crime and Occurrence Sheets in districts and the daily Crime and Occurrence sheets in Cities, have been the main channel of publication for the Police for quite a long time. As these sheets contain particulars of crime and criminals, stolen properties, persons wanted, etc., the public, by keeping themselves in touch with them, have always an opportunity of rendering useful assistance to the Police. But due to lack of communication, prompt dissemination of such information has not always been possible, especially in rural areas. It may go a great way, in making this publication reaching further than they have done so far, if arrangements can be made to deliver them to selected prominent citizens, taken at random each month. It will be a good idea if these sheets will also contain a weekly bulletin, warning the public of the activities of those engaged in confidence tricks, uttering of counterfeit coins and circulation of forged currency notes, doping cases and so on, especially when such waves of crime have broken out in any part of this State.

Issue of the Police Administration Report.

(ii) *Police Administration Report* : The Police Administration Report has also been a means of informing the public of police problems, accomplishments and plans. But it has not served its purpose in full because it is published very late, and copies of it are not also readily available to the general public. As this report is full of statistical statements, difficult for the ordinary citizen to interpret, coupled with incomplete textual materials, the effect, which it has had on the common man, has been negligible. The mode of presentation

of these reports will have to be so modified, so that facts are presented in it in a form suitable for public consumption.

Publication of the Police Journal.

(iii) *Police Journal* :—The Police Journal has also been the means of making known to the public as well as to the Police the various police problems, and the difficulties under which police work has often to be done.

Holding of periodical Press Conferences.

(iv) *Press Conferences* :—The recent decision taken to hold Press conferences by the various Governmental Departments at their highest level, has been an important means of reporting to the citizens, more completely about Police problems and the plans designed to aid in their solution, as accounts of such conferences will appear throughout the Press. Through these periodical conferences, when the public are taken into confidence, the ordinary citizen can be made to understand the situations confronting the Police correctly, so that he, in his turn, may realise our difficulties, and endeavour to do all that is possible, to make the work of the Police more effective and easy.

Adoption of other methods.

Other methods :—Various other means are also being adopted or can be adopted to enlist the co-operation of the public by the distribution of printed leaflets and hand bills when such a course is found necessary and beneficial.

5. HOW THE PRESS CAN ASSIST THE POLICE IN THEIR WORK.

Informative programme to precede law enforcement.

(a) *Educating the public* :—It is accepted by all, both the Police and the Public, that their mutual co-operation is necessary for the maintenance of law and order, and in the protection of person and

property. It is also accepted that the informed citizen is always co-operative. He understands the need for control, the purpose of regulations and the reasons for police policies and procedures. Experience has also shown that enforcement invariably fails, when it is not preceded by a broad informative programme.

The role of the Police in Republican India.

(b) *Information about the functions of the Police:*—The main purpose of the Press should be to educate the ordinary citizen, and inform him about the multifarious functions of the Police at the present day. With the changed conditions, the Police are becoming more and more closely associated with the day to day lives of the community. The unsettled political situation has thrown a vast burden on the Police of this country, as a result of which, they have to concentrate on such problems as the disruptive and violent activities of organisations like the Communists. Semi-military duties have also devolved on the Police which have been entrusted to the personnel of the Special Armed Police, who have to be constantly vigilant, with a view to put down acts of violence, wherever they show their heads.

Jail and Reclamation work.

Even in regard to the administration of the jails, to enlist the aid of the Police has become more and more necessary. The repeal of the Criminal Tribes' Act has thrown extra work on the Police.

Enforcement of Prohibition and Fire Service.

Their duties have grown further, and the enforcement of prohibition has become their responsibility. Even the Fire Service has become a limb of the Police Force. That the Police have been entrusted with all these various duties is not widely known. The Press will be doing considerable service, both to the Police and the Public, if it will bring to the notice of its readers these facts in a sympathetic attitude, so that the ordinary citizen may realise, what

really is police responsibility, and whether the Police have not been doing their best about them, inspite of the violent changes that have come about in this country, in the shortest period of time, and the consequent handicaps confronting them in the discharge of their work.

Announcement of schemes for the Enforcement of Traffic Regulations.

(c) *Traffic regulations* : The publication of short notices relating to traffic regulations and other police activities, which affect the general public, should be readily undertaken by the newspapers. Most newspapers will be found to be willing to devote the space required for such announcements and notifications, because these matters are of human interest, and sometimes provide material for some form of campaign against the Police through want of proper information with regard to the enforcement of minor traffic regulations, which are likely to inconvenience some sections of the public. A timely announcement promptly made in the leading newspapers, will inform the public of what will take place, and warn them to be prepared. This arrangement is bound to remove all feelings of antipathy to the Police, otherwise likely to be aroused.

The policy of absolute fairness in publishing accounts in the newspapers.

(d) *Fair presentation of facts* : If proper relationships are established between the Press and the Police, by the adoption of the measures referred to already, it should not be very difficult for the Editors, to adopt a policy of absolute fairness, in all their relationship with the Police and their work. The Police should also not attempt to conceal the weaknesses of the department, or the dereliction of individual policemen. If that were done, they are sure in return to receive from the Press a fair presentation of the facts, and a critical analysis of the causes.

The Press should not try to condemn the department as a whole for the acts of individual policemen. The policemen are only drawn from among the citizens of this country, and therefore are likely to have sometimes imbibed by their own weaknesses.

6. FREEDOM OF THE PRESS.

The Police are the servants of the people.

As this country was until 1947 under a Bureaucratic rule, a good deal of odium was attached to the Police and their functions, as they were the most important limb of the Police State entrusted with the duties of enforcing law and order rigorously. Though in the course of the past five years in Republican India, the Police have done everything to show to the people at large, that they are the servants of the people, and the custodians and protectors of their person, property and privileges, all the sections of the Press in this country, have not correctly resiled to the change that has come about.

Attacks against Police in the Press due to its lack of information.

Scurrilous attacks of the Police and their methods still continue in some sections of the Press, which is either due to lack of correct information by it, or a refusal on its part to accept correct information even when proffered. In the Totalitarian State, the Governments easily solve such problems by taking complete control of the Press, and using it as the medium for Governmental propaganda only.

The 'Yellow Press' in democratic India.

India being a democratic country, such a course cannot be followed. In the result, it is sometimes found that certain local newspapers indulged in publishing accounts which are generally inaccurate, or are half-truths and sometimes false. They also publish confidential documents obtained by highly questionable methods. It is to such newspapers and publications, that the name of the 'Yellow Press' has

been given. Their activities require vigilant watch so that the mischief attempted to be done by them may be effectively prevented, before it is too late, by contradicting them. The good Press, if it were responsible for giving publications to such incorrect accounts, will be ready to acknowledge the mistake through its own columns.

7. CONCLUSION.

Power of the Press and its role in moulding public opinion.

The Press has a greater freedom and exerts a more profound influence in the moulding of public opinion, which is the corner stone of the public co-operating with the Police in their arduous and unpleasant work. The Press has established a great power in this land in recent times, and on the whole, its activities have been in the right direction.

Good relations between the Press and the Police are for the common good.

It is therefore to be borne in mind by all Police Officers and men, that amicable relations between the Press and themselves is a valuable asset, the importance of which cannot be over-estimated. It should not be forgotten that the Police cannot function effectively, without the unstinted co-operation of the public. A good Press can easily aid in creating such an atmosphere in the country. Similarly a bad Press can destroy it. The good relationship between the Press and the Police should however be maintained as high a level as possible, by constant personal contacts, and the exchange of views about their mutual problems, and about matters connected with the publication of a fair and impartial account of occurrences, intimately connected with both the Police and the citizens of this country.



THE RAID.

By "N. N. N."

We left for the jungle edge in lorries, with muffled lights. After debussing I inspected my men, about 200 strong. They all knew the difficulties of the task. It was a pitch dark night, but every one of us was keen to close in with the dacoits and deal with them. Our enemies were guerillas, who would be concerned only with escaping from us, giving us no stand up fight. Their fire was never sustained nor accurate.

This gang that we were after were ten strong armed with looted police 410 carbines and muzzle loaders. Like all good guerillas they had selected hide outs in the deep green wilderness where the gang lie low, till the police hunt slackened when they raided again, murdered, looted and vanished into their lair.

Our informant system was very untrustworthy, the men on this job, broke both ways and hence were entirely untrustworthy. But each information, however nebulous, had to be checked up. On the evening of this raid, we had received the message from "headquarters" that the gang was nesting in a valley near a water hole about eight miles inside the forest. This was the break that we were all expecting for a long time. I felt sure now that our job would be soon over if this information was correct.

I got my men all in single file and led them into the forest. We side tracked two villages and finally, following our informant had to creep into a Lambadi village, to get another contact. I quietly informed the men that the village should not be awakened but the contact got at without making much noise. Our informant went and got the contact who was said to be the dacoit informant. The man was got and both were whispering together. But when I flashed my torch at him, I was surprised beyond measure, because, he was one of our own trusted informants. So you see what we had to work against? He recognized me and felt guilty, but I convinced him that he has now to take us to the dacoit hide out and everything will be forgiven.

He swore on all that he held holy that there were no dacoits in the area. I believed him, but orders are orders, hence taking him with us, we plunged into the darkness. It was about 23 hours then. I was close behind him as we started down a slope. In the dark it was all that we could do to keep up with him, as we slipped and slithered, clutching at everything in front to keep balance. After a while we struck an animal path and reached a mountain top, we crossed the ridge and cut down our marching speed until we were literally crawling. We all knew a single noise would scare the dacoits, but as we walked on, the men were getting fatigued and making noise which could be heard for a long distance. But I was confident however that if the dacoits were there in the hide out, they never cared to hear us, as the wind was in our favour. After five hours of sweat, grind and darkness we approached the hide out.

This was a range of mountains in a 'U' shape with towering mountains with virgin forest around, except for a nullah running into the 'U'. Presently I halted the men and sent out surrounding parties, the men unslung their rifles and quickly disappeared on either side ; I beckoned to my party, who had to advance straight in. If the dacoits were really there, we, it would be, who would face the music. As I gave them the last minute instructions, a faint smile leapt into each tired face, as though an intolerable weight had been taken from them. (God bless the Madras Police, they are a fine set of men.) We then spread out and walked on slowly, eyes, ears, nerves and weapons ready. The other patrols were closing in around as previously arranged. The signal after complete circling was a shot to be fired by the officer in charge of one of the parties, when a general search was to be launched. We moved five yards at a time waiting, all alert and then advancing in pitch darkness. Dawn was getting rosy in the East when we heard the random shot - the signal. We charged and searched, but there was complete silence all around. The devil had taken care of its own. The gang was not there. As a matter of fact they were never there, you see ! The information was a dummy sold to us.

Address to the Station Vigilance Committees in Madras City.

BY SRI F. V. ARUL, I. P.,

It is unfortunate that in this country the term "the police and the public" is considered as an antithesis rather than as a corporate expression denoting a close relationship between the two entities mentioned. The reason is not far to seek. What with a foreign Government ruling this great country of ours, it was natural for the police to be identified with the Government in power and to be regarded as an alien body, constituted for the express purpose of keeping the people in subjection and for harassing them. Little did they realise that after all the police are of the same blood and character as the people and that they had done little else except carrying out lawful orders issued to them by the Government in power. As a result, the public have developed over a period of two centuries strong prejudice against the police. It was therefore not surprising that the attitude of the general public should have been one of derision, apathy and even hostility. Whatever may have been the tenuous grounds on which such a hostile attitude should have been adopted in the old days, there can be no excuse for such an attitude with the dawn of independence. The public should now realise that the Government is their very own and that the police who fulfil their functions under that Government is as much their very own. No longer are there any grounds for the police to be regarded as an alien body. It is therefore the duty of the public to cast aside their old fears and prejudices and to come forward and extend their hand of co-operation with the police. The police are not supermen. They are just as human as anybody else. They need the co-operation of every individual, if they are to carry out their functions successfully. It is with this object that Station Vigilance Committees have been constituted. You have been chosen as members of these committees, because you have shown public spirit and civic consciousness by

co-operating with the police in your endeavour to serve the interests of the general public. You may therefore be rightly called as the chosen representatives of the public, and you may be considered to constitute that essential link between the police and the public which is indispensable to the prosperity and well-being of both. A great responsibility therefore rests on your shoulders.

What is then this responsibility? Each of you is an influential person in your own localities. You must use the excellent contacts which you have with the general public for the following purposes :—

(a) To report promptly to the police any information regarding the occurrence of crime. It is well known that quite a lot of crime goes un-reported in this great country of ours. There is no crime reporting agency in the City as we have in the mufussil in the shape of Village Headman. It is not possible for the Divisional Police to know suo motu of every criminal occurrence. As I have said before only a superman can divine every occurrence. It is therefore the duty of the public to come forward and report every criminal occurrence. I therefore wish to impress upon you members of the Station Vigilance Committees that you must make it a special point to report all occurrences which come within your knowledge. You must also make it a point to educate the large sections of the public who look up to you for guidance to report all occurrences. You must also realise that unless all occurrences are reported, the true pattern of crime will not be apparent, and it will make it difficult for the police to trace the origin of such crime. You must also realise that Section 45 of the Criminal Procedure Code makes it incumbent on the public to report all the graver forms of crime. It is surprising that not even one per cent of the public realise this fact or the fact that they could be penalised if they are remiss in the duty enjoined by the Section of the Criminal Procedure Code referred to by me. I, therefore, hope that all of you members will go about this task with zeal and interest. Let your slogan be “Report all Crime to the Police”.

(b) You must help the police in carrying out duties in regard to crime and criminals. It is not enough if you merely report or encourage people to report occurrences. Having reported such occurrences, you must continue to take interest so that the task of the police in investigating and in prosecuting crime is rendered casier. All of you know of the great dislike which the public have to be associated with proceedings connected with the police or with the criminal Courts. As a result of this lamentable attitude, criminal administration has to a large extent been adversely affected. You should therefore encourage the public to co-operate with the police in all such proceedings, and in so doing, you will be helping the Police in a great measure in carrying out their duties in regard to the control of crime and criminals.

(c) You must take such immediate steps in regard to crime and criminals as the law empowers you to take. Perhaps many of you do not realise that you have certain powers of arrest. This power of arrest may be exercised by any member of the public. You can arrest anybody who commits within your view a cognisable offence, and having done so, you should hand over the arrested person to the police without the least possible delay. It very often happens that scientific clues are messed up by the public before the arrival of the police. Here again, it would be most helpful to the police, if you preserved scenes of crime intact. You should not fail to educate the general public on this important point.

(d) You must also help in the prevention of crime and in tracing and apprehending wanted persons. Prevention is better than cure. Therefore if you know of any design or intent on the part of anybody in your neighbourhood to commit any offence, it should be your hounden duty to report the matter immediately to your particular Station House Officer, so that he may take adequate preventive steps. You should also ascertain from your Station House Officer as to who are the various persons who are wanted in the various criminal cases

and you should use your influence with the general public to find out the whereabouts of such wanted persons and communicate the same to the Station House Officer.

(e) You should also report any movements or suspicious activities of known Bad Characters, and any information regarding stolen property. You should get a list of all the K. Ds. in your station limits from the Sub-Inspector and you should help by maintaining some kind of surveillance over the activities of such persons, so that their nefarious activities may be nipped in the bud. I need hardly inform you that if crime is rampant, it is because there are so many dishonest persons who are ever ready to buy stolen property at cheap cost. The existence of such people is a menace to society. Their anti-social activities should be curbed and this can be done only if you will co-operate with the police by furnishing the necessary information. In a City like Madras, there are a very large number of receivers, and I would request each one of you to lay information regarding such people to the police, so that they may be prosecuted. These then are your basic duties. This does not mean you should not communicate to your Sub-Inspector any information regarding any other matter which may be of use. If you are to fulfil these basic duties, you should keep in close touch with the Sub-Inspectors and Divisional Inspectors. You may be sure that the police for their part will keep in very close touch with you, for they realise that the greater the co-operation between them and the public, the greater will be their measure of success. So, I am sure that from the point of view of self-interest alone, the police will give you their unstinted help and co-operation. It is only you who will have to make a conscious effort in the matter of co-operating with and helping the police. I exhort you all for the sake of public spirit and for the good of the general public to render hearty co-operation with the Divisional Police.

Before I close, I must utter a note of caution in the matter of carrying out your duties. You must be careful not to interfere with

the normal life of the people or to mis-use your position at the expense of simple and law-abiding citizens.

I do not wish to end this address on a lower note. I want to tell you that any good work rendered by you will be greatly appreciated and that such an appreciation will not merely be verbal but will be substantial in the form of money or kind. Even so, I have no doubt that the greatest satisfaction which you will derive is from the service which you will be rendering to the general public. Let therefore "SERVICE" be your motto.

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CRIMINAL HUMOUR.

"The man who would make a pun," declared Dr. Johnson, "would pick a pocket!" And Peveroni who was a bandit by profession, did both. He was a rogue with a singular turn of humour, this Corsican. He picked the pockets of his victims, and his pun was on his own name, for he left the bodies strewn with capsicum berries (Peperoni.)

This is but one of the many forms of what the Germans call galgenhumor—gallows humour, Charles Peace provided another example. He was taking his time on the morning of his execution when one of the warders fretfully urged him to hurry up.

"What's the hurry? 'demanded Peace? "Are you being hung, or am I?"

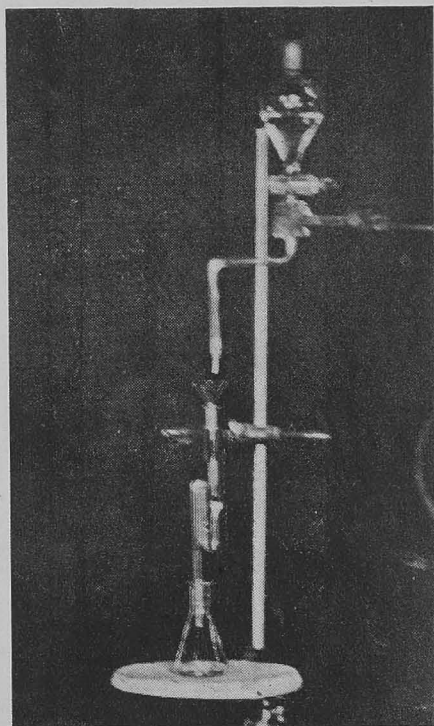
FORENSIC EXAMINATION OF HAIR*

BY N. PITCHANDI, M. Sc., A. I. I. Sc., A. R. I. C.

The medicolegal importance of the identification of hair with regard to the origin whether from a man or another animal as well as the determination of the similarity between a specimen of human hair and hair from a suspected person, is well known.

In one of the earlier cases in England¹, it was suggested in evidence that the two short, stiff white hairs which were found on a hammer (alleged to have had been used to produce the fatal wounds to the head of the deceased) might have been goat hairs. Two medical witnesses stated, however, that they were hairs from the human eyebrow and that they were similar to those from the deceased's eyebrow. It appeared as if it had been squeezed between two blunt substances. The witnesses were severely cross-examined, it is stated, upon the structural differences of human and animal hairs. There have been numerous other cases, reported in literature, in which the scientific evidence with regard to hair has played an important part. In one case it was proved that the hairs found on the coat of the accused were those of short horn cattle similar to the herd from which animals had been maimed. In another case a man was accused of murder of a young boy. It was said that the man was affected with an insane impulse to kill cats and that he had killed many. Hairs were found on his clothing and these were found to be similar to those of the domestic cat.

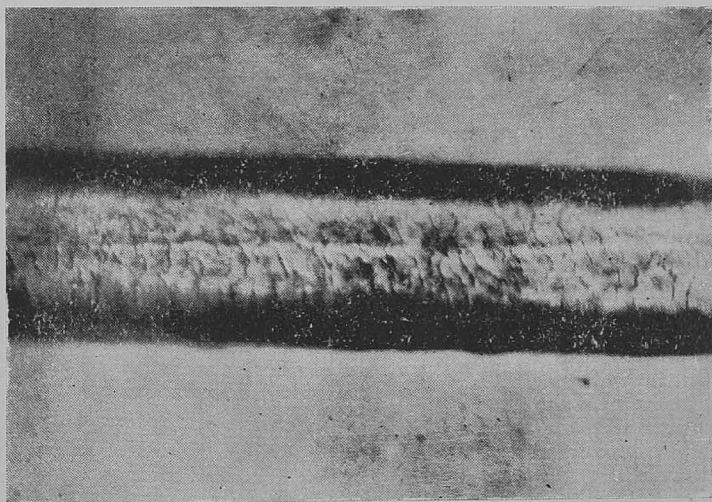
One hundred and ninety six items of hair had been examined by the Chemical Examiner to the Government of Madras during the four years 1938-1941. In a case of murder in Madras² in which a large stone was used to crush the victim's head, pieces of dark and grey hair were found on the suspected stone. These pieces of hair were found to be human, possessing characteristics of scalp hair. There was also evidence of crushing at one end of each of the pieces



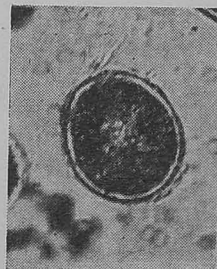
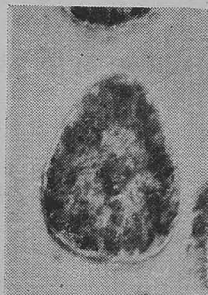
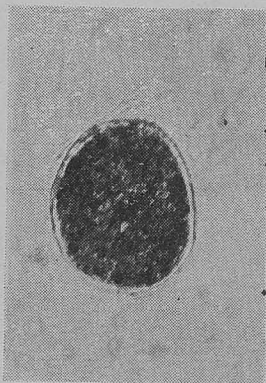
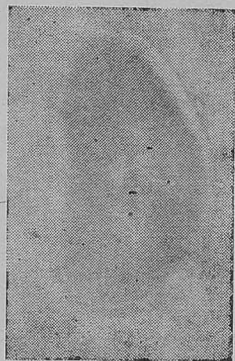
Apparatus used for the determination of fat or oil on hair.



Human hair stained to show the cuticles.



Human hair showing the cortex and the medulla.



Photomicrographs of different types of cross sections
of human hair. x 225.

of hair. In another case of murder, some pieces of hair were found sticking to a bush and they were examined and found to be similar to the hair from the deceased. In yet another case of murder, some pieces of hair were found on the scene of crime. A knife which was used to kill the deceased woman had some pieces of hair sticking to it and some ear-ornaments found in the possession of the accused had also some pieces of hair sticking to them. These three specimens of hair were found to be similar and probably belonged to one individual though it could not be affirmed with certainty.

Method of examination :—After a preliminary examination with a lens ³ the hair is cleaned well and examined microscopically. Hair that is so strongly coloured as to make microscopic examination difficult or impossible may be sufficiently decolourised to show the structure, by treatment with hydrogen peroxide. Roig ⁴ recommends warm sodium carbonate solution (15%) for fifteen minutes, then hydrogen peroxide (100 vols) for three hours. Lawrie ⁵ uses a solution consisting of 5 ml. of hydrogen peroxide (10 vols) 0.5 ml. ammonia with 100 ml. water.

For the examination of cross sections of hair, these are prepared by embedding the hair ⁶ in paraffin wax and sectioning with a microtome. Stoves ⁷ recommends imbedding of hairs in celluloid and cutting sections. In another method ⁸, the hair is placed in a piece of liver which is embedded in celloidin or paraffin for sectioning.

Although the difference between human and animal hair and the characteristics of hairs from the various parts of the human body are stated, the methods of establishing similarity between two specimens of human hair are not clearly described in text books of forensic medicine. Human hairs in India are not so varied in shades as in temperate climates, the main shades here being black or grey with brown in some cases. Experience has shown that the examination of hair under ultraviolet light is of little value in establishing identities.

The following scheme for the examination of hairs has been worked out :—

1. *The determination of fat or oil on hair*⁹: In the examination of hair with a view to establishing its identity, the determination of fat or oil on it and its qualitative examination would presumably provide useful information. A simple 'micro soxhlet' apparatus was therefore devised and constructed by the author for the micro determination of fat or oil present in small quantities of hair using the micro balance. This apparatus consists of a glass tube of 3 mm. bore bent twice to form a siphon in the form of "N" of 5 cm. in height and prolonged at its lower end to a distance of 5 cm. The upper limb of the "N" is cut off at the middle of the "N" and joined to a tube of 8 mm. bore and about 7.5 cm. in length. The wider tube is blown slightly above the point of junction. A plug of asbestos or defatted cotton wool is placed at the junction. 20 to 30 mgm. of hair are weighed out into the apparatus and a micro-fat-flask of suitable size is kept on a warm plate, the apparatus being fixed so that its lower end enters the mouth of the flask. A separating funnel with the stem bent twice into alternate right angles and with its tip drawn off to nearly a capillary is arranged to deliver ether into the upper opening of the apparatus at such a rate that siphonings occur each time after the ether in the flask has evaporated off. After a sufficient number of siphonings the dropping of ether is stopped and the ether evaporated off from the flask which is then cooled and weighed in the usual way. The flask is weighed again after rinsing it several times with light petroleum spirit, evaporating off the traces of petroleum spirit on the flask and cooling. The difference between the two weights gives the weight of the fat or oil. The petroleum spirit washings are evaporated to dryness in a small silica dish, and the dish with its contents are examined under ultra violet light as well as chemically, colour tests being applied for those vegetable oils which yield such tests. Sesame oil if

present, may be detected by dissolving the residue in carbon tetrachloride and applying Baudouin's test using a reagent of cane sugar dissolved in hydrochloric acid.

The test applied in this manner was found to be very delicate and to detect the presence of sesame oil, which is commonly used in South India, in carbon tetrachloride solution even in such high dilutions as one in five hundreds. Carbon tetrachloride does not interfere with the test.

Sesame oil is the oil most commonly applied to hair for toilet purpose in these parts. The quantity of oil as determined by the above method was found to vary between two and four per cent in various individuals. In some of these a positive Baudouin's test was obtained with the solution of the residue in carbon tetrachloride.

2. *Staining of the cuticle* : The structure of the cuticle in a longitudinal specimen of hair may be brought out for microscopic examination by the following method : The specimen of hair is cleaned with a mixture of rectified spirit and ether, avoiding scrubbing, and the specimen is immersed in water in an ordinary watch glass to which a few drops of ammonia solution have been added. A few drops of hydrogen peroxide are then added and the specimen set aside till bleached, which usually takes about an hour. The specimen of hair is then removed, washed and introduced into another watch glass to which a drop of carbol fuchsin solution has been added. After a minute, the specimen of hair is taken out, washed in water and mounted in canada balsam.

The staining of the cuticle is not of much use in differentiating between human hairs because the size and arrangement of the cuticles are found to be more or less similar in all specimens of human hair though it may be useful in differentiating between human and animal hair¹⁰.

3. *Longitudinal examination of hair under microscope*: The specimen is mounted in water and the shades of hair are observed. It is however found that hair from the same scalp may have different shades, some black, some brown and so on apart from grey hairs. Evidence based on a single piece of hair, therefore, may be misleading. It is found that the hairs of some persons have broader medulla than those of others. The width of hair and the width of the medulla, wherever present, are noted for comparison.

4. *Examination of cross sections of hair*: Examinations of cross sections of hair often offer reliable evidence with regard to the similarity between two specimens of human hair. The following method of preparing the cross section of hair has been found to be useful: A candle is prepared from equal parts of hard paraffin and rosin melted together. The candle is split longitudinally with a knife and the hair is imbedded between the two split halves with the help of a little molten paraffin-rosin mixture. Sections are directly mounted in xylolbalsam. This method is simpler than the methods involving the imbedding of the specimen in celluloid or with the liver pieces.

Specimens of cross sections of hair are examined with regard to:

1. the size of the cross sections.
2. the shape of the cross sections.
3. The cuticle, whether thick or thin
4. The distribution of the pigment in the periphery and in the central portion of the cross section.
5. the nature of the pigment, whether granular or smooth, and
6. the colour of the pigment.

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Madras University.

MAJOR DHUN'S FIRST CHEETAH.

BY "EX-SAP."

The door of the T. B. thundered to the kicks of some one outside. I cursed and tried to pretend that the room was empty and burrowed myself deep under the pillows. The hanging on the door was persistent. I looked at the watch and found it 10 minutes past mid-night. I opened the door and there in olive drab was my friend, Major Dhun. Did I say, friend? I meant friend of course. A friend in need is a friend in deed!

I rushed back to my bed and put my head under the pillows. I know my Major Dhun very well. He is one of those grinning nocturnal homo sapiens who blossom into activity as the sun sets behind the hills. And the worst is that they expect every other person whom they know, to rush about with them, sans sleep, sans rest, sans life! What a life! I groaned, as he tilted my camp cot and rolled me to the floor.

"Goats" he said, "I want goats, my dear chick". If there is one thing I abhor, it is some one calling me chick! To Major Dhun all are Chicks dependent upon his moods, varying from darling chick, chick old thing to blasted chick. He was on his rounds collecting goats and sheep for his company men.

You may well ask, why, he should trouble me. I ask you the same. Why lug me out of the bed if he wanted goats. I don't keep goats either for sale or sentimental reasons. Actually I am allergic to the aroma of this nimble footed animal. The only time I have had sympthetic feeling towards the species was when one of the tribe strolled into the boss' office and ate up a paper which saved me from a rocket!

I think I forgot to explain why Major Dhun crept about at night for goats. You see, he is one of the shikhari types, and half his time is spent in scanning the bushes for game—any size varying

from the turtle doves to the tigers with a .303 rifle and a D. B. B. L.! So his travels for goats for his company were done at night, creeping from village to village in his 15 cwt. vehicle fitted with a searchlight. In the area where we were stationed it was thick jungle and all types of game was available and invariably they would be near the road, at night just waiting to be shot. Only, in Dhun's case, he seemed to do all the waiting! Which brings us to the point very nicely, why I should be bounced out of bed and sat upon at mid-night.

I am the lucky guy. (Before I proceed, do you by any chance know anything about shikaris and their shooting superstitions? Well, meet me later and I will bore you so stiff with this stuff, that you would not need a stretcher to be carried out—just fix a couple of wheels to your feet and push you off like a porter's trolley).

I am, to say modestly, the sportsman's joy. People will tell you, "take R-with you and you are bound to get a mongoose atleast if not a bison". Further, I am the boon companion. I don't want to do any shooting myself, to spoil another's record. I don't brag about the skins I have got and the heads I have mounted. I am satisfied if allowed to follow like a dog, carrying the cartridge cases, extra gun, water bottle, sand-wich case, binoculars, shooting stick, gurkha knife, first aid kit, Rolleiflex camera and other small articles like search light set complete with sixteen cells and two battery lights, a yard long. My joy would be complete if on the return journey I am allowed in addition to carry a couple of rabbits, a deer's head, a leg of a boar and the other gun also. No wonder people came 60 miles to push me off my camp cot at mid-night!

Joking apart, I am an old hand at the game. I have seen hundreds of chaps shoot—whatever may be the result. I have also the knack of making the villagers believe that I was doing them a

great favour by getting them out of their beds at nights and organising shoots for chaps like Major Dhun. So, by 01-00 hours that night we were on Dhun's lorry heading for the various villages on the main road, our search-lights spraying and searching every bush and glade by the road.

This Major Dhun was an amateur, at the game—you could make it out easily by the way he talked big about the eyes of animals and their spurs with crooked toes etc. Believe me, all picked up from books! For instance, that night he was telling me, me of all people, to look out for eyes in the searchlights. "If you see red eyes, then it is a herbivorous animal and if it is greenish, then a carnivorous animal". At that exact time there appeared a red eye in the light about 100 yards from us and 4 feet above the ground. Quickly Dhun's gun was trained on it, and I whispered "Don't shoot, wait for the other eye." "Nonsense, it is Sambhar" he sharply rebuked my ignorance. I had half a mind to tell him "No, iddly", and only the fear of his dropping me there and pushing off prevented me. There was a bang and the eye flickered out. I need not state the excitement as Major Dhun and staff jumped the vehicle to get the sambhar. I lit a smoke. Five minutes later they returned with the trophy—of course all good shikaris will have recognised it—that wretched bird which has cost us so many cartridges. I complimented Major Dhun on his getting at least the bird - most dont !

We collected a number of goats at intermediate villages. Our clothes collected various types of heavy odour that even the dhoby blanched and backed out when put to him on our return. At V'puram, the villagers shouted that there was a cheetah in the village and that it had been consistently eating the goats that were being carefully guarded for Major Dhun! I could almost see the blood pumping into good old Dhun's heart. Here indeed was the chance of a cheetah - an ideal chance to brag in the Mess tomorrow!

I was unceremoniously pushed to the back - ground while Dhun with waves of his hands and fierce whispers tried to understand the villagers. He moved out with them and when I tried to follow, he tuned and said "Shshhhh" so fiercely my glasses fell off. I picked them and turned towards the lorry in an offended manner maintaining my dignity right through. At that moment there was a loud growl from the outskirts and I fairly flew to the lorry and got myself up. It is rare to hear a cheetah growl unless he is annoyed and means business. At that minute I felt I had no business with him especially whilst smelling of a billy goat. I crept under the tarpaulin while the goats misbehaved themselves on my legs. I suppose, I must have slept then, inspite of the angry growls of the cheetah.

About 20 minutes later there was single rifle shot and there was absolute quiet. Then every dog in existence opened up. I thought we were done for. Shooting cheetahs require a good aim and steady nerves. Further the blighter is an unforgiving sort and tries to track and maul you if you have only been able to hurt it. A little later there came a joyful procession of villagers bearing a dead cheeta slung from a pole. I jumped out of the lorry and wrung Dhun's hands. His face was all teeth and perspiration. No words were necessary. The shot was a clean one and right between the eyes. A perfect shot and I said so.

Major Dhun said, "Come on let's get off and skin it at your place." He pulled out a couple of fivers and gave it to the villagers to drink to his health.

Major Dhun started explaining how it had dodged between wooden stumps. How it had growled and shown all its teeth at him as if he was a dentist. How its growling had made him drop two rounds of '303 in the jungle. Then its blue eyes;

“What” I said, “you saw its eyes?” “Yes of course” he replied trying to brush off my interruption. I doubt if he heard me at all. Already he was in the Coy Mess describing step by step, growl by growl, peg by peg, soda by soda, the manner in which he, Major Dhun of so and so, etc., had single handed crept into the night and saved the villagers from a night of fright. Ah, he Dhun had!!!

“You took no light with you” I shouted in his ear. He turned his befuddled eyes at me and said, “Pish, by lantern!”

“By lantern?” I exclaimed. This was stupendous. Magnificent.

Major Dhun seemed to wake up to his surroundings. He clamped a goat smelling hand to my mouth and got me out of the lorry. As soon as we were out of hearing of his men, he said, “My friend, I am sorry if I did not take you with me and let you carry the cheeta back. But it was in the course of duty.” There were tears in his eyes and mine too as he told me *all*. I understood *all*. We crept back to the lorry. We shook hands and complimented each other on being born and bred gentlemen. I have never revealed the secret so far.

He had shot the cheeta after it had been trapped in a cage and by the lantern light!



SPEECH BY SRI P. KUPPUSAMI, I. P. S.
 on 5—12—51 at the P. T. C., Vellore.

Having been deputed by the Government to undergo certain courses of instruction in the United Kingdom I had the opportunity to remain in the United Kingdom for about 5 months. The first course I attended was at the Nottingham Science laboratory. This course lasted for a period of a fortnight. Formerly it lasted for a period of 3 weeks but later on the period was cut down to 2 weeks, since the staff was engaged in various other work like attending court, investigation etc., so much so they were not able to find sufficient time to devote to those attending the courses. After finishing 6 weeks I came over to London and attended the Senior Detective Training School at Hendon. This lasted for a period of 10 weeks and during that time selected officers of the United Kingdom of the ranks of Sergeants and Inspectors and quite a number of students coming from all over the colonies and the Commonwealth countries such as Malaya, Hong-Kong, South Africa and also Saigon (which does not form part of the Commonwealth), Ceylon, Pakistan and also the West Indies attended the course. At Hendon during these 10 weeks emphasis was laid on English Law and at the same time by sending for all the best persons available who specialised in certain subjects lectures were delivered on all aspects of Police work. Considerable emphasis was laid apart from study of law and the method of investigation, on the side of Scientific Aids which go to help the investigating officer. During the course of instruction, class examinations were held which were 3 in number. The marks obtained in these class examinations are not taken into consideration except for the purpose of testing the progress made. There is a final examination at the end of the course and this is conducted by the Scotland Yard. The Assistant Commissioner of Police, C. I. D., who is the

head of the C. I. D. assisted by an Officer from the Laboratory and another Senior Police Officer conducted the Oral test. There is also a written test on both English Law and Procedure and also on Scientific subjects. The minimum required for a pass is 75% and anybody who got less than 75% was considered to have failed. This affected the students of the United Kingdom who had to take this course necessarily and unless they passed in this course they were not entitled for promotion.

After completing these 10 weeks I was attached to Scotland Yard for a period of one month. During this period I studied the problem of Traffic control, photography and other matters such as map reading, statistics, criminal records etc.

I will now deal with the Laboratory first. The laboratories came into existence only a few years back. Formerly there were no laboratories as such. Officers such as the Chemical Examiner we have, who were doing research work, for the Government and for the Police, assisted investigating officers but later on the United Kingdom was divided into 7 regions each with a laboratory namely, at London, Nottingham, Birmingham, Bristol, Preston, Wakefield and Cardiff.

The set up of the laboratories is as follows:—There is one Director who is the head of the Institution. He is usually a Chemist, physicist and biologist all combined. He is assisted by a certain number of assistants of which one is a physicist who deals with all problems relating to physics. Another is a chemist and a third a biologist. Apart from them there is an Arms Expert attached to each laboratory. The work done in almost all these laboratories is akin. Certain laboratories specialise in certain matters. For instance, Birmingham specialises in Pathology. At Cardiff, Mr. Harrison, the director is supposed to be eminent

as a hand-writing expert and the United States of America often consults him in matters relating to Documents; Nottingham specialises in firearms and similarly others. The laboratories consult each other for Expert opinion on certain subjects on which they feel opinion from others will be useful.

Coming to the subjects that the laboratory deals with, it is felt that not every case should be sent to the laboratory. Primarily it is the job of the investigating officer to deal with the case. Whenever it is felt that a particular matter is likely to reveal a clue if examined at the laboratory it is sent to the laboratory. It is then for the laboratory to test and give such valuable opinion as is possible. When the authorities took statistics in 1936, the Home Office in London found that only 4% of the indictable offences (cognisable cases) could be dealt with in the laboratory. But subsequent to 1936, there has been vast improvement in the methods of investigation and scientific appliances, so much so 9 to 10% of the cases reported could be dealt with in the laboratory with benefit to the investigating officers.

Coming to actual subjects dealt with, there is at first the physical examination conducted in each laboratory. The physical examination consists of a few of the following. There is for instance the spectographic analysis. The spectographic instrument is costly and it is not possible for every laboratory to have spectographic instrument particularly in India. This instrument is useful in the examination of paints. In ordinary cases involving accidents or say house-breaking or any other cases where it is suspected that paint has stuck to the offender's clothing or on any other article, such clothing or articles should be taken over for purposes of examination at the laboratory. The preliminary test is a simple one and can be done in all laboratories and no costly instrument is required for this. What is done is, the paint is scraped off with a sharp instrument and collected. Each paint

consists of a mixture of various materials differing from 4 to 5 colours. While scraping the sequence of colour is first noticed which is of importance. Supposing it is found that there are 4 colours ; the sequence of these namely the order is noticed. If the sequence of the colours of the paint in the object found at scene agree with the sequence of the colours in the object seized it is proof that the paints must be from the same source. This, as can be seen, is a simple analysis which can be done in any laboratory but sometimes it may not be possible to definitely say by such examination alone whether the paint are from the same source and it here that the spectographic instrument comes into play. The paint on hand is burnt in the instrument and it produces a certain graph. Each paint produces a particular graph ; from this analysis it is possible to say definitely whether the two paints are the same or not. This test goes a long way to help an investigating officer in coming to certain conclusions.

I will next deal shortly with the restoration of erased marks. There are cases where numbers on motor car engines, cycles and machines are erased or scraped. In England criminals either erase and remove such numbers to make identification difficult. In all such cases by treatment the erased marks can be restored. Such restorations are carried out in the laboratory and there is no need for costly instruments to be installed for this purpose. It could be done even in a small laboratory in our place. The etching solution is used for this purpose. It is a mixture of concentrated Hydrochloric acid and Methyl Alcohol. The suspected article is treated with this mixture. The article is first cleaned well with emery paper. Benzene is then applied to clean the surface further. Wax is later put all round to build up a wall and the etching solution is applied by means of a small glass filler to the surface and left for 5 minutes to stand till the solution turns dark brown. It is then removed, the surface cleaned and fresh

solution is applied again. In this manner the surface of the particular object is treated 4 or 5 times. The solution has the effect of eating away the surface metal. When a machine is made in the factory and a number is struck, all the molecules below the surface are disturbed. So the impression is still there but not visible to the naked eye even though the visible portion on the top is removed. When the object is treated with this etching solution as the surface is eaten away the erased number is slowly brought back. After this process another solution is used to clean the surface and remove the remaining etching solution to prevent the metal being eaten into further by the remains of the etching solution. These tests have been successfully conducted to prove to the satisfaction of courts the identity of lost articles.

Examination of glass :—It is by adoption a simple method of test which can be conducted in any of the laboratories that glass is examined for purposes of clues. What happens is this. Take the case in which a person has entered a particular room, breaking the glass. The question arises whether the breaking was from inside or outside. There had been a case in England where two persons joined together murdered a man inside a house, went out to cinema, returned, broke the glass window pane from inside and reported a case of robbery and murder for gain. The Police came and had, after enquiry, suspicion whether the version given by them was correct. It struck one of the officers that the broken glasses should be examined. They pieced together the bits of glass and after careful examination came to the conclusion that the glass was broken from inside and not from outside. This led to the detection of this difficult case. No laboratory is necessary for conducting such simple experiments. When glass is broken there is immediate action and re-action. As a result of striking the glass, the glass as a matter of fact bends and then strikes back. It then breaks and certain lines will be noticed running radially

called radial lines, and certain other lines running in a circle will also be seen and they are called concentric lines. So there are two types of marks or lines produced on the glass. By an examination of the striations in the case of radial lines it is possible to say whether the blow was from the inside or the outside. These striations in the case of radial lines run not towards the blow but always away from the blow. By such examination it is possible to say from which side the glass was broken.

The next question is whether the particular piece of glass found at the scene and that recovered from the possession of the accused are from the same piece or not. This also is possible to find out in any laboratory. The density of the glass for this purpose has to be found. Benzene and Bronoform are used in the experiment. The glass pieces are dropped into a bottle containing a mixture of Benzene and Bronoform and will float at a certain level. The glass recovered from the possession suspected is then put into the solution and if it floated at the same level as the previous pieces, then the conclusion is that they are all from the same piece. This conclusion however might not be quite accurate. The next step in arriving at a decision is in finding out the refractive index of the glasses. For this purpose an instrument is used which is known as the refractometer. The instrument itself is costly. By experimenting on and subjecting this glass to other tests it is possible to definitely say whether the glass was from the same piece or not.

The use of ultra violet and infra red rays :—The Chemical Examiner in Madras makes use of these rays in Police and other cases. The difference in the use of ultra violet and infra red ray may not be known to all those cadets assembled here. The ultra violet ray is used to restore erased marks. Supposing the writing on a paper is erased and then something is written over. It is possible by subjecting that particular paper under the ultra violet

ray to determine whether there has been any erasure or not and what the original writing was. The ultra violet ray is used for this purpose. The infra red ray is used to find out over writing. Supposing something is written in ink over pencil writing. By using infra red rays it is quite possible to find the original writing underneath. By ultra violet ray and infra red ray photography it can be shown to a Court of law that there has been erasure and over-writing. These photographic instruments are not very costly.

These subjects mentioned come under physical examination. The subjects that fall under chemical examination are toxicology, oils inks, stains, as well as dusts. Supposing at a particular place an offence takes place. Very often when a man visits the scene certain particles of dust stick to his shoes and clothing. When the investigation starts, the investigating officer may be able to recover from the clothes samples of soil and other articles which are peculiar to a certain locality. These articles found from the clothes of the suspect are examined at the laboratory and it will be possible to give clear reasons whether they come from the same place or not. This itself is not conclusive proof but goes a long way to show whether a man visited a certain scene or not. Coupled with other evidence this evidence will strengthen the chain.

So also in the case of dust. There is road dust, industrial dust, house dust etc. When a man has been working in a certain industrial area there is bound to be dust on his clothes which will be different from those found elsewhere. Inks and various other matters can also be examined in the laboratory.

Coming to the Biological examination I would like to invite attention to the examination of blood, stains, hairs, fibres etc. We have read the literature on all these subjects and the subject is not new. Only we have not been making proper use of all these tests

for want of a laboratory. The chemical examiner has plenty other work and consequently takes time in giving an opinion on these matters. With regards to the blood there are tests which can be done in any laboratory to decide whether it is human blood or not and whether it belongs to a particular group. It is possible to say by the blood groups whether a particular child is of certain parents or not, but this cannot be said conclusively. In the same manner it is possible to find out whether saliva is of a certain person or not and saliva has also been classified into groups. If in any place an offender has smoked a cigarette or cigar for instance and has thrown the stump, by examination of the saliva on the cigarette or cigar stump it is possible to say if the particular person smoked it or not. Similarly, urine, sweat etc., can be subjected to tests in the laboratory.

I will next mention about the firearms section attached to each laboratory. Here in Madras we have got a firearms Expert attached to the C. I. D. In England, a Junior Officer is selected and is attached all through to the laboratory and only the person who has got certain qualifications and aptitude for this work is trained. In the firearms section they conduct experiments to find out the distances from which firearms could have been used. The process itself is simple. There is what is called a 'recovery box'. This is a hollow box and cotton wool is placed inside. To the mouth of the box is tied a piece of cloth and the weapon is fired at the mouth from varying distances. The marks on the cloth found at the scene of crime in gun shot cases is then compared with the marks on the cloth from the recovery box and they are able to say from what distance the gun has been fired. When it is a question of point blank range, the singing and powder marks will be sure indication of the nearness. Experiments are also conducted to find out whether a particular cartridge has been fired from a particular weapon. This also is being done by the arms expert

at Madras. By use of comparison microscopes, the similarity in marks are examined. By such a comparison opinion is given almost correctly whether the cartridges were fired from the same fire-arm or not.

To sum up, laboratory work it may be said it can be classified into four groups. The first is supplying, as they say, 'the missing link'. Secondly, in many cases we cannot supply conclusive proof and in such cases the work in the laboratory helps in strengthening the weak links. The third is testing the veracity of the witnesses and the fourth is in avoiding waste of time in investigation. Since there are quite a number of laboratories spread all over England all these questions are easily dealt with and without delay.

The next subject I want to mention is the traffic problems in the United Kingdom. In order to control traffic, traffic lights are extensively in use. It is in England, of all other countries, that this system is perfected. If we take London we find traffic lights almost all over. The system works very efficiently. To begin with, years ago they started with the hand piloting traffic light just as we have got now at the Central Station, Madras. Later on they developed the fixed cycle system. In this system the lights change automatically. This system was further improved and the latest is the vehicle actuated system which acts just like a human being in regulating traffic. Whenever there is heavy volume of traffic this system operates and allows the heavier traffic to pass first and so avoids congestion. This system operates something like a man standing at a particular place and operating signals observing the accumulation of traffic on all sides and regulating them with good common sense. The instrument is very costly.

In order to reduce accidents the driving tests are conducted with great care. When a man goes for a driving test he is asked

in detail about the functioning of the traffic lights. If he does not explain clearly about the change of the lights and the sequence etc. he is rejected immediately. To see whether there is over-speeding or not certain methods are adopted. They have got a number of 'tag cars'. These cars are equipped with radio telephone and uniformed constables travel about patrolling. Whenever there is an irregularity or overspeeding on the road the offenders are charged. Car drivers however come to know whenever there are 'tag cars' patrolling in the area, and they slow down. As soon as the 'tag cars' passes them they again go fast. In order to prevent this and to detect overspeeding, plain-clothes men were put in the 'tag cars' but there was a protest from the public and the press against this method so much so only uniformed men are sent to patrol in these cars. But these men in uniform cover their uniforms with overcoats and to a great extent conceal their identity while travelling. These cars operate in London and within a radius of 50 to 100 miles round London. They are very fair in their dealings with the public. A signal is always put up warning that a police car is operating and if people in spite of the warnings overspeed they are charged. In order to prevent congestions and accidents, "No waiting" signs are put up in all important roads but cars are very often seen parked in roads in spite of these sign posts and this does not work well. The number of car parks available are not adequate and the authorities realising the difficulties do not enforce the regulations strictly. As regards speed it is limited to 30 miles per hour. Heavy vehicles of 3 tons and over are limited to only 20 miles per hour. Speed restriction signals in various places are also put up. If there is any occasion on which large numbers of people are expected to attend such as Race meetings, Wimbledon tennis matches etc., in order to avoid congestion of traffic, sign boards are put up two or three days prior to the event reading:— "This road is not open to race traffic" etc. Even during the Festival of Britain exhibition, from the outskirts of

London they put up boards directing to "festival park" "exhibition grounds" etc. There is however nobody to enforce these instructions but it is left to the good sense of the people, to follow the directions. Usually people coming from outside London are able to find their way about by reading these sign posts.

The authorities in England have great consideration for the safety of the people. They put up pedestrian crossings across busy roads and these have the sanction of parliamentary statutes. These crossings are marked out all over London in all important streets. According to the statute, as soon as a person gets down from the side-walk to cross the road the motorist on the road has got to stop immediately.

Constables are also deputed near schools where children gather in large numbers to help the children to cross roads safely. They escort children across streets and roads. This is a small act but goes a long way to improve the relationship between the public and police. Such methods do not involve finance and if carried out in our place I am sure it will go a long way in improving the relationship between the public and the police.

In the system of communication, they are very advanced. They have got the teleprinter system in London. If they want to pass on a certain information to a police station, the teleprinter is used. Each police station is equipped with a teleprinter and as soon as a message is sent out, simultaneously the police station receives the message. This applies to London only. If they have got to send a message outside London they have got an "express message scheme". They send the message to Scotland Yard who in turn are able to send it to all districts at the same time. These methods are all costly and it will be difficult for our State to adopt them immediately. The Police Department of Great Britain have used Science and mechanical contrivances to a great extent to help investigation and the mobility of the Police Force.

MICROSCOPE IN THE DETECTION OF CRIME.

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Of all the scientific precision instruments used in scientific aids to crime detection, the microscope occupies the foremost place by virtue of its use in a variety of investigations such as examination of blood and semen, of tool marks on objects, of poisons, of bullets and cartridge cases, of hair etc. In fact there is hardly any branch of forensic science where the microscope does not play an important part. Hence it is essential that every investigating officer should know something of this instrument and its uses in crime detection. The present article is intended to give in brief, the uses to which the microscope is put in the several examinations done in this laboratory.

The word "microscope" ordinarily signifies any instrument used for producing an enlarged image of any object. Thus the "Magnifying glass" used by watch repairers is a simple microscope. From such simple microscopes, which give magnifications of ten to twenty times of the object, there are a variety of other microscopes to suit particular needs, known as compound microscopes. These are capable of giving very high magnifications. Essentially a compound microscope consists of a combination of a system of lenses for magnification, with other accessories, for conveniently placing the objects under examination and suitably illuminating them.

Very often during the course of criminal investigation, it will be found that only very small quantity of an object is

available, whose nature, if identified, will give valuable clues to the case under investigation. In such cases the microscope comes to the aid of the investigator. The advantage of an examination with a microscope lies in the fact that the object is not altered or otherwise destroyed as in the case of a chemical examination. It will still be available for further tests or for production as a material object in the court.

The microscope is made use of in almost every section of this laboratory viz. the section dealing with (1) the examination of stains (2) the examination of poisons (3) the examination of explosives, (4) the examination of firearms and tool marks on objects and (5) other miscellaneous examinations such as hair, fibres, dust and dirt, seals etc.

Examination of stains :—Under this heading material objects in criminal cases are received for testing the presence of blood stains or seminal stains on them. In the case of blood stains it may so happen that only a very small speck of blood is present on a weapon with which the offence was committed. To find out whether a blood stain is due to human blood or otherwise, it is necessary to do a preliminary spectroscopic test to prove the presence of blood, followed by a serological test to prove the presence of human blood. A very tiny quantity of the stains available on the weapon or other objects is transferred to a microscope slide and viewed through the microscope. The magnified image of the blood stains will be seen. This magnified image is again viewed through a spectroscope to find out whether the characteristic absorption bands of blood are present or not. But for the aid of the microscope it may not be possible to prove the presence of blood on the weapon, because of the very small amount of the material available.

Similarly stains of semen on fabrics are extracted with weak acetic acid solution and a drop of this extract placed on a microscope slide, side by side with a drop of iodine solution. Where the two liquids meet, there is the formation of characteristic crystals, if semen is present. These crystals can be seen only under a microscope. Further search through the microscope may reveal the presence of spermatozoa, the finding of which is positive proof of the presence of semen. Spermatozoa are visible only under the high power of a microscope.

Examination of poisons :—Very often in cases of poisoning of vegetable origin, portions of the vegetable matter like pieces of leaves or seeds will be found in the stomach contents of the victim, as a sediment. If this sediment is carefully picked up and examined under the microscope, certain botanical characteristics will be seen from which the exact nature of poison taken can be concluded. Photomicrographs taken from the sediments in stomach contents of some poisoning cases are reproduced below.

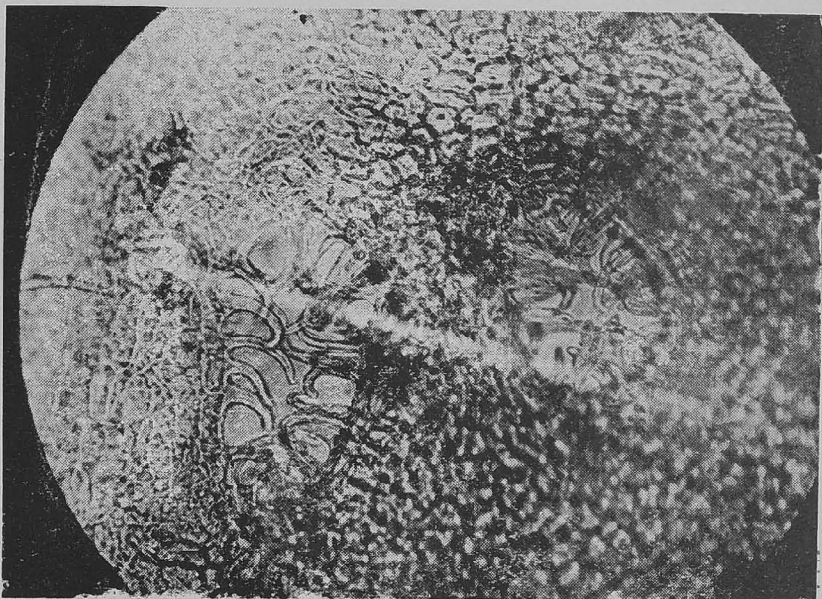
Photograph A shows a cross section of red oleander leaf.

Photograph B shows a cross section of yellow oleander leaf.

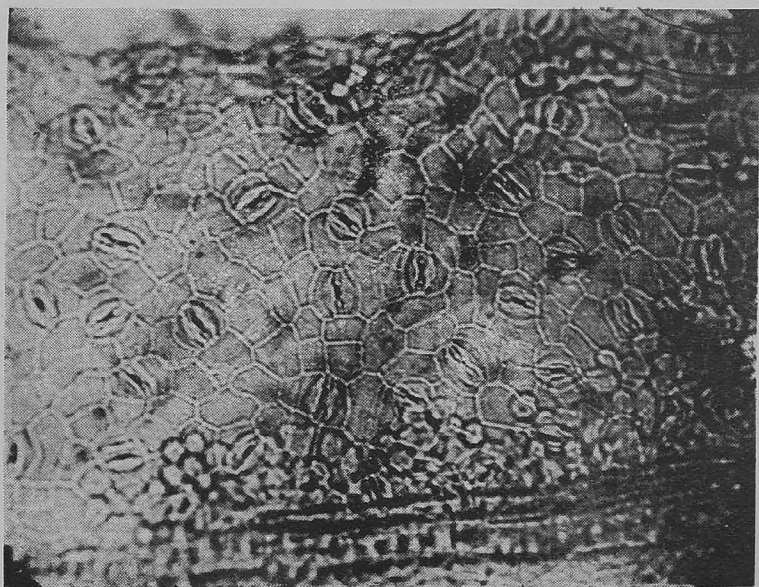
Photograph C shows the appearance of the seed coat of a datura seed.

In addition to the above, certain poisons isolated from the viscera by chemical means, such as arsenic, mercury etc., can also be identified under the microscope. Similarly the presence of alcohol in stomach contents and other articles can be proved by looking for the characteristic hexagonal shaped crystals of iodoform formed by the conversion of alcohol into iodoform by chemical method.

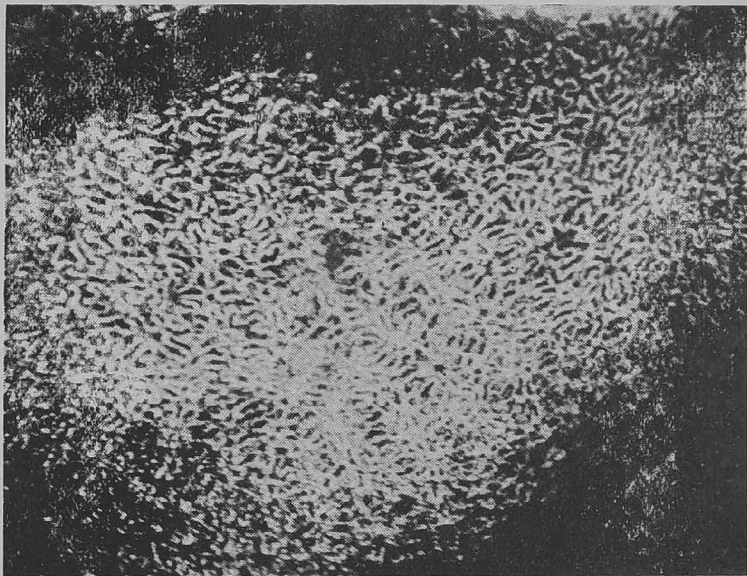
Examination of explosives :—Among the high explosives commonly used for crime are the gelignite cartridges which consist of ammonium nitrate, nitroglycerine, wood pulp etc. The presence of wood pulp in fragments of these unburnt cartridge material can



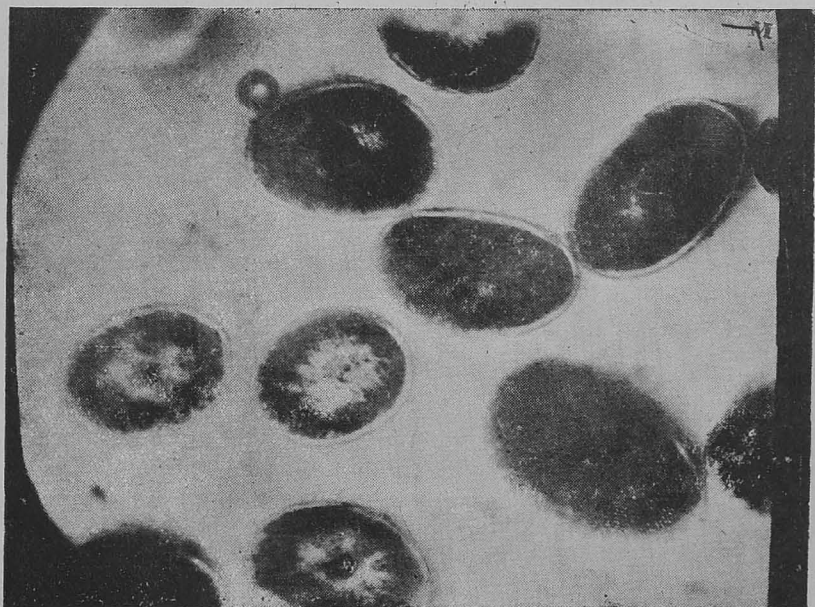
A



B



C



be detected by the characteristic appearance of wood fibres under the microscope. Further in accidents caused by explosion of gun powder the presence of free carbon on objects at the scene of occurrence can be proved by an examination of these articles under a microscope.

Examination of fire arms and tool marks on objects:—In order to definitely say as to whether a particular cartridge or a bullet was fired from a particular firearm, it is necessary that a thorough examination of all the markings on the bullet and the base of the cartridge should be made. When a cartridge is fired from a firearm, certain markings are made on the cartridge by the striker pin, breech face and the extractor of the firearm. In the case of bullets the markings are made by the rifling in the barrel of the firearm. These markings when viewed through a microscope will show certain peculiarities particular to the weapon from which the cartridge or bullet was fired. These markings will be reproduced on every cartridge or bullet fired from that firearm. So it is possible to fire "test rounds" from a suspected firearm and compare or "match" the markings on them with those on the "crime cartridge" or "Crime bullet". For this purpose two compound microscopes with a connecting eye piece are used. Such an arrangement is called a "Comparison microscope". If two cartridges or bullets fired from the same weapon are viewed through a compound microscope, placing one cartridge or bullet under each microscope, we can get a magnified image of a portion of the markings from each of the cartridge cases or bullets, in the same visual field. By suitable adjustments it is possible to "match" these markings and prove that both the cartridges or bullets were fired from the same weapon. The essential feature of the examination is the comparison of the magnified images of the surface markings on the bullets and cartridges.

The same type of examination is used to find out whether a particular tool has caused the particular markings on an object. For instance in cases of theft of telegraph and telephone wires it may be necessary to prove that the cutting plier recovered from the house of the accused is the one used for committing the offence and further the wires kept concealed in the house of the accused formed part of the wire found in the scene of offence. In such cases "test cuts" are made with the suspected tool on similar wires and the markings caused at the cut edges compared with those on the cut edges of the wires recovered from the possession of the accused, using the comparison of microscope. As a further proof the markings on the surface of the stolen wire and those on the wire at the scene of offence can also be similarly compared.

Other miscellaneous examination:—It may sometimes be necessary to find out whether the pieces of hair sticking to a weapon or other objects is human hair and if so whether they belong to a particular individual or not. For this purpose the suspected pieces of hair are examined under the microscope and the features characteristic of human hair are looked for. These features will be visible only under the microscope and not to the naked eye. Further, to say whether a particular piece of hair belongs to a particular individual or not, cross sections of the suspected hair and the specimen hair of the individuals are examined under the comparison of microscope. By such an examination it is possible to say within certain limits, whether a particular hair is similar or not in appearance and structure to another hair. The appearance of a cross section of human hair under the microscope is seen in the appended photograph.

Because of the characteristic microscopic structures possessed by the various fibres it is possible to determine whether a particular fibre, however small it may be, is that of cotton, jute or

silk etc. Such examinations may be useful in associating a particular material object, on which the fibre was sticking as having come in contact with particular garments of similar material.

A further extension of this type of examination will lead us to find out whether dust and dirt adhering to a material object is from a particular place or not thus connecting the presence of that object to that place. The examination of seals, viz. whether two or more seal impressions were made with the same seal and whether the same sealing wax has been used for making two or more seal impressions, can also be done with the aid of a microscope. The magnified images of the suspected seal impressions can be compared under the comparison microscope as also the nature of filling material found in the sealing wax examined regarding their size, shape etc. Thus it will be seen that the microscope affords endless possibilities for the several scientific examinations in the detection of crime.

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