

## The forgotten Indian pioneers of fingerprint science

G. S. Sodhi and Jasjeet Kaur

While researching on the history of fingerprinting, we came across several archive records which throw light on the key role played by two Indian police officers, Sub-Inspectors Azizul Haque and Hem Chandra Bose, in the advancement of the science of fingerprints. The so-called Henry's *System of Fingerprint Classification* was actually worked out by them. The world's first fingerprint bureau was set up at Calcutta (now Kolkata) in 1897, mainly by their efforts. In addition, Bose invented the telegraphic code system for fingerprints and published it in 1916. Sir Charles Stockley Collins of Scotland Yard, who is recognized worldwide as the originator of fingerprint telegraphic technique, published his findings in 1921—five years after Bose's publication. Likewise Bose devised the single digit fingerprint classification system three years prior to Harry Battley. The then British government reciprocated the sagaciousness of Haque and Bose by awarding to each of them an honorarium of Rs 5000 and by conferring the titles of Khan Bahadur and Rai Bahadur respectively, on them. (After India became free, these decorations were rendered meaningless, for all titles were abolished under an Act of the Constitution.) However, this is not enough. Justice has been denied to Haque and Bose. Now that the colonial clouds have dispersed, it is pertinent to highlight the contribution of these police officers so that they may officially be recognized as pioneers of the science of fingerprinting.

### Classification system for fingerprints

On 12 June 1897, the Council of the Governor General of India gave consent to the report of a committee which suggested that henceforth fingerprints should be used for classification of criminal records. The report emphasized that the method of fingerprinting was simple, cost-effective and more accurate than the anthropometric technique used earlier<sup>1</sup>.

During the same year, the first Fingerprint Bureau in the world was inaugurated at Calcutta. The criminal record at this Bureau was streamlined in accordance with a formula worked out by Sir Edward

Richard Henry, the then Inspector General of Police, Lower Provinces, Bengal. Hence it was named Henry's Method of Classification. Today, nearly all the nations of the world follow Henry's method for maintaining criminal records<sup>2</sup>.

When Henry took up the study of fingerprints, Haque and Chandra Bose were already working in the Anthropometric Bureau. These two police personnel played a leading role in formulating the classification method. Our research proves that the classification formula was actually worked out by them, while Henry shrewdly gave his name to the system. According to Haylock<sup>3</sup>:

*It was, in fact, K.B.A. Haque who helped Edward Henry in creating a mathematical formula to supplement Henry's idea of sorting 10 digit fingerprint forms into a 'pigeon hole' cabinet system based on fingerprint patterns. It was by this method that the famous '1024 pigeon holes' (see Box 1), now part of the fingerprint folklore, came into being. It seems that Khan Haque, over a period of weeks, devised the basis of the classification system we now know, and took it to his boss, Edward Henry, who studied it for couple of weeks.*

On 12 July 1900, Lord Beeper, Chairman of the Commission appointed by the Secretary of State to go into the details of classification method asked Henry:

*'Is this system an invention of your own?'*  
*'Yes', replied Henry<sup>4</sup>.*

In 1899, Henry read a paper on the classification of criminal records at Dover (England) before an assembly of the British Association for the Advancement of Science<sup>5</sup>. He did not acknowledge the role played by Haque and Bose in devising the system.

In 1900, the Government of India sponsored the publication of Henry's paper in enlarged form. It was entitled, *Classification and Uses of Fingerprints*. Subsequently, Her Majesty's Stationery Office in England published numerous editions of the book. No word of thanks for Haque and Bose appears in any of the editions<sup>3</sup>. Berry<sup>2</sup> writes:

*Haque is alleged to have muttered to confidants that Henry could not even understand the system when it was patiently explained to him.*

Haque and Bose could not have done anything beyond that. In 1900, native Sub-Inspectors of Police had no channel of redressal against a British Inspector General nor would a high official doubt that a junior, and that too an Indian, could file a representation against him<sup>3</sup>.

However, Puri<sup>6</sup> believes that in the early 1920s, Haque and Bose did represent their case to the government. On surveying Home Department Records at the National Archives of India, New Delhi, we found that Haque alone represented his case. And it can hardly be called a representation.

The whole issue arose when in 1924, Haque received the title of 'Khan Bahadur' and Henry, while congratulating him remarked, 'I wish they had at the same time given you a jagir (a piece of land)'. On his retirement as Deputy Superintendent of Police and Honorary Magistrate, Haque wrote an application dated 3 March 1925 to the Governor of Bihar and Orissa<sup>7</sup>:

*Your humble memorialist's prayer is that in consideration of his loyal services, especially in the matter of the adaptation of the Finger Print System to practical use... Your Excellency's benign Government may consider your humble memorialist's case with a view to the grant of jagir.*

Haque also stated in this letter that since he was confirmed as Deputy Superintendent of Police just a year and a half before his retirement, his pension had been cut down and therefore he was finding it difficult to maintain his position. In support of his case, Haque enclosed a clipping from *The Statesman* dated 28 February 1925 which, in an article entitled, 'Indian affairs in London' stated, 'A Muhammadan Sub-Inspector played an important and still insufficiently acknowledged part (in fingerprint classification)'. It is also distressing to note that in this ten-paragraph letter, Haque refers to himself as *Your Humble Memorialist* thirteen times! This is more of an appeal than a representation.

**Box 1.** How the fingerprints are classified

Normally, alphabetical order is followed to affect classification of a specific commodity. For example, the books in a library are catalogued in alphabetical order with respect to the name of the author or the title of the text or both. It takes just a few minutes to pick out a particular manuscript from a bulk running into lakhs. The alphabetical order, however, does not work when criminal records are to be classified. Criminals have many aliases. Moreover, they keep changing their appearance to dodge the police. Therefore, even if a photograph is appended to the record sheet, it does not serve any purpose.

Even before they began work on fingerprints, Henry, Haque and Bose realized that if criminal records were to be streamlined, it had to be on the basis of a mathematical formula. They observed that fingerprint patterns fall into three broad groups: arches, loops and whorls (Figure 1). On analysing the patterns of several thousand persons, the police officers found that nearly 5% fingers have arch pattern, 60% have loop pattern and 35% have whorl pattern. Since statistically, too few fingers have arch design, this pattern is combined with loops. Now there are two categories of finger ridges.

Loops (including arches): L

Whorls: W

Next, the ten fingers are grouped into five pairs, as shown in Figure 2. The right hand (R) is placed left with palm down, while the left hand (L) is placed right with palm up. The pairs are arranged in the following fraction forms.

Pair	I	II	III	IV	V
	Right index	Right ring	Left thumb	Left middle	Left little
	Right thumb	Right middle	Right little	Left index	Left ring

In the first pair, consisting of right index and right thumb, there are four possibilities.

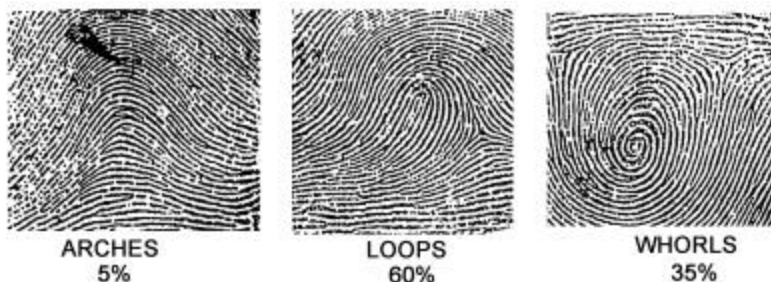
- (i) Right index is L, right thumb is W.
- (ii) Right index is W, right thumb is L.
- (iii) Both are L.
- (iv) Both are W.

These four possibilities exist in all the other pairs as well. Therefore, total number of possibilities is  $4 \times 4 \times 4 \times 4 \times 4 = 1024$ .

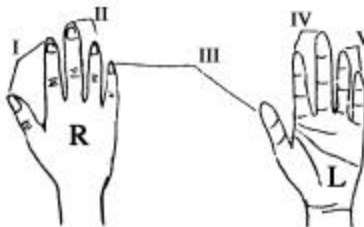
The figure 1024 is the square of 32, i.e.

$$32 \times 32 = 1024.$$

The criminal record room has 32 cabinets (numbered 1 to 32) and each cabinet contains 32 files (numbered 1 to 32).



**Figure 1.** Fingerprint patterns.



**Figure 2.** Pairing of fingers for determining the classification formula.

Whorls occurring in the 1st, 2nd, 3rd, 4th and 5th pairs are accorded a value of 16, 8, 4, 2 and 1 respectively. Loops (including arches) are assigned a value of zero, irrespective of the pair in which they occur.

We now take example of a convict whose right thumb, right ring, left middle, left index and left ring fingers have whorl patterns (W), and the remaining have loop patterns (L). The filing formula may be worked out as follows.

Pair	I	II	III	IV	V
Arrangement	$\frac{L}{W}$	$\frac{W}{L}$	$\frac{L}{L}$	$\frac{W}{W}$	$\frac{L}{W}$
Numerical value	$\frac{0}{16}$	$\frac{8}{0}$	$\frac{0}{0}$	$\frac{2}{2}$	$\frac{0}{1}$
Add	$\frac{10}{19}$				
Further add	$\frac{1}{1}$	$\frac{11}{20}$			

The fingerprints of this person would be found in the 11th file of the 20th cabinet.

The unit increase in the numerator and the denominator has been done to file the record of a person whose all ten fingers have loop patterns. In such a case, the formula would work out to be 0/0. This would not find a place in the record room, for the cabinets and the files are numbered from 1 to 32. By adding one to the numerator and the denominator, the fraction becomes 1/1 and the fingerprint record of this person can be located in the 1st file of the 1st cabinet.

What we have described is the primary classification of fingerprints. The system can be further modified by introducing secondary and tertiary classifications, thus making the search easier.

According to the law, when a person is sentenced to imprisonment of one year or more, all his ten finger impressions are recorded on an index card before he is let off. The fingerprint formula is worked out, and the index card is placed in the proper file. If he breaks the law again, the index card is there to identify him. He may change his appearance, his religion, his name, but he can neither change the ridge pattern of his fingertips, nor the position of his index card in the criminal record room.

The Government of Bihar and Orissa, where Haque served his last posting, considered the application sympathetically. However, in these provinces there was no land which the government could have possibly donated to Haque. Hence it forwarded the letter to the Government of India, stating that Haque deserved to be adequately rewarded and that in place of a jagir, he may be awarded an honorarium from the central fund. J. D. Sifton, Esq., C.I.E., I.C.S., Officiating Chief Secretary to the Government of Bihar and Orissa further wrote (letter no. 761 PR, dated 15 June 1925):

*Azizul Haque was... allowed to start research work upon a method of classifying finger prints, and after months of experimentation he evolved his primary classification which convinced Sir E. R. Henry that the problem of providing an effective method of classifying fingerprints could be solved. Thereafter the secondary and other classifications were evolved and the Khan Bahadur played an important role in their conception.*

Sifton also stated that in March 1897 Haque appeared before the committee of experts constituted at the request of Henry, to test scientifically the anthropological and fingerprint system. He was put to all possible tests by the committee. However, neither the Government of India nor the Government of Bengal could confirm whether Haque actually appeared before the committee.

When this letter was referred to D. Petrice, Director, Intelligence Bureau, it created an element of doubt. On 13 July 1925, Petrice wrote:

*There can be no doubt whatever that the present system of classification of fingerprints was a scientific discovery of great value and has been adopted all over the world. Whether Khan Bahadur Azizul Haque took as prominent a part in evolving it as is claimed for him is, however, a matter on which I have no information. He is not mentioned in Sir Edward Henry's own book, and in the history of the fingerprint system as given in the Encyclopedia*

*Britannica, Sir E. Henry is quoted as the inventor....*

It also created an element of surprise, for Petrice further wrote:

*If the Khan Bahadur rendered as valuable services as are alleged as long ago as 1893, it is curious that his claims to special recognition should have been so belatedly represented.*

This situation arose because so long as Henry was in India, he did not speak or write a word about the contribution of Indian officers to the fingerprint classification system. Petrice then referred the letter to the Government of Bengal, since Haque was with the Bengal Police when the classification formula received accreditation. L. Birley, Chief Secretary to the Government of Bengal replied back on 30 November 1925 (letter no. 4382 PI):

*The key (plate) referred to in page 73 of Sir Edward's book entitled 'Classification and Uses of Finger Prints' is attributed*

## HISTORICAL NOTES

to the Khan Bahadur and this key may have suggested the arithmetical rule for determining primary classification which is the method in use at present.

Apart from this, the Government of Bengal could not shed any light on Haque's role. It therefore suggested that the case may be referred to Henry himself.

Henry endorsed the grant of honorarium to Haque. In a letter dated 10 May 1926, he wrote to P. H. Dumbel, the then Secretary of the Services and General Department, India Office<sup>3,7</sup>:

*...I wish to make clear that, in my opinion, he (Haque) contributed more than any other member of my staff and contributed in a conspicuous degree to bringing about the perfecting of a system of classification that has stood the test of time and has been accepted by most countries.*

In this letter Henry also wrote<sup>7</sup>:

*As in most research enquires, results were achieved by team work.*

One wonders why Henry, after a lapse of 30 years, became considerate towards Haque. Puri<sup>6</sup> advocates that two factors were responsible for a change in Henry's attitude. First, Haque (and Bose too) had risen to the rank of Deputy Superintendent of Police and could, therefore, assert himself. Secondly, by 1920s, the colonial grip was becoming loose. These may be true. However, there was another reason for Henry turning soft and, we feel, that this was more important. Four years earlier, Henry had spoken of Haque's contribution to F. W. Duke, an officer at India Office, Whitehall. Duke, in turn, wrote a letter on 25 January 1922, to Sir Havilland Le Mesurier, Acting Governor of Bihar and Orissa in which he stated:

*Azizul Haque devised the classification which is now in force not only in India but practically throughout the civilized world. It may have required no exceptional talent; if not done by him, the same, or an equivalent, might have been done later by someone else, but the fact remains that it was devised by him, has not been superseded and its use is world-wide.*

When Henry was consulted on Haque's honorarium, a copy of this letter was also sent to him. It was now not possible for Henry to retrace his steps.

At the time of final approval of the honorarium, the Home Department noted

*It appears from the information now received that he (Haque) was Sir Edward Henry's principal helper in perfecting the scheme and that he actually himself devised the method of classification which is in universal use. He thus contributed most materially to a discovery which is of world-wide importance and has brought a great credit to the police of India.*

In his letter to Dumbel (dated 10 May 1926), Henry also wrote<sup>7</sup>:

*In addition to being indebted to Khan Azizul Haque, I was indebted to some of his colleagues but, to what extent I cannot after the lapse of nearly 29 years specify more exactly.*

However, Henry contradicted himself when consulted on Bose's contribution to the system. Four years later he wrote<sup>8</sup>:

*The Rai Bahadur... has devoted the whole of his official life to perfecting the methods by which search is facilitated and as his labours have contributed materially to the success achieved he is entitled to great credit.*

This shows that all along Henry was aware of the contribution which Haque and Bose rendered to the fingerprint system, but he spoke up only when asked to do so.

The contribution of Bose to the science of fingerprinting is best summed up in a communication (No. 650 PI, dated 5 February 1929) from the Government of Bengal to the Government of India, Home Department<sup>8</sup>. It stated:

*During his long service in the Bengal Bureau he (Bose) acquired unique knowledge of the science and introduced various improvements in the methods of subclassifying finger impressions of which the following are deserving of special mention:*

- (1) *The method of comparing imperfect impressions containing only a few naked ridges.*
- (2) *The sub-classification by the numerical method.*
- (3) *The method of estimating the probability of fixing identity by the ridge characteristics.*

(4) *The sub-classification of the accidental type.*

(5) *The improved system of indexing.*

(6) *The introduction of a telegraphic code for finger impressions.*

(7) *The classification system for a single digit impression.*

Going by this communication, it is evident that Bose contributed more to the subject of fingerprints than Haque. This has also been indicated in a note dated 28 February 1929, recorded by P. C. Bamford of the Intelligence Bureau<sup>8</sup>:

*I know Rai Hem Chandra Basu (Bose) Bahadur very well, and it would be impossible to find a stronger protagonist of the fingerprint system. His open idea was to make it a success. ..Hem Chandra Basu (Bose) not only did his share in the original introduction of the finger print system all over India, but continued, throughout his whole service, to devote himself to this particular work, and for this reason I consider that his case for an honorarium is better than that of Khan Bahadur Azizul Haque....*

By saying so, Bamford was merely corroborating the recommendations of the Government of Bengal<sup>8</sup>:

*The Khan Bahadur, it is understood, was associated with this work only for a period of five years when the system was in its infancy. The Rai Bahadur has, on the other hand, been upgrudging in placing on record in his books the result of his long experience which has contributed much to the advancement of the science and the Governor in Council considers that an honorarium of Rs 10,000 might appropriately be granted to him by the Government of India. In making this recommendation His Excellency in Council is influenced by the consideration that the officer rendered exceptional service to police administration generally, not only in India as a whole but elsewhere.*

This recommendation was, however, turned down by the Government of India on the ground that Henry had said that Haque contributed more than any other member of his staff in perfecting the system of fingerprint classification. Hence the honorarium granted to any other officer had to be less than or equal to that awarded to Haque. Nevertheless, Petrice, in a note dated 5 March 1929, wrote<sup>8</sup>:

*I am satisfied that he (Bose) has a clearly established claim on the generosity of the Government of India in recognition of the exceptional services which he has rendered to the Police Administration generally not only in India, but in civilized countries throughout the world. I am not so satisfied, however, that there is a case for giving him an honorarium of Rs 10,000, as compared with Rs 5000 previously awarded to Khan Bahadur Azizul Haque.*

Had Haque not applied for the award, his efforts towards evolving the classification formula would have gone unrecognized. And had Haque not got the honorarium, even Bose would not have been awarded. Bose received the honorarium not because he applied for it, but because Haque's case had set a precedent. Nevertheless, the true award for a scientist, who has served a global cause, is not monetary benefit in form of honorarium, but tagging of his name with his invention. We suggest that the method be renamed as Henry-Haque-Bose system of fingerprint classification.

### Telegraphic code system for fingerprints

While scrutinizing the literature on history of fingerprints, we came across a paper by Puri<sup>6</sup>, in which the author asserted that Bose also discovered a system of telegraphic code for fingerprints, which was later adopted by Scotland Yard, without acknowledging the contribution of the originator. However Puri did not offer any evidence in support of his assertion.

We probed the matter further by going through the Home Department Records available at National Archives of India, New Delhi. Our findings prove that Puri's contention seems to be correct.

Bose described the system in a book entitled, *Hints on Finger-Prints with a Telegraphic Code for Finger Impressions*<sup>9</sup>. We could trace a copy of the manuscript in archives records and, as far as we are aware, this is the first book on telegraphic code system for fingerprints. Part II of the book deals with telegraphic code system as applied to fingerprints. Concerning this section Bose writes:

*Part II, which is a novelty in this book, deals with a method by which the details of a man's finger impressions can be telegraphed to any Finger-Print Bureau for*

*search, thus avoiding the delay inseparable from the method of awaiting the arrival of the actual finger-prints through the post, a delay which would be considerable in the case of a reference to Scotland Yard or a Colonial Bureau.*

Home Department Records reveal that Bose's publisher sent a copy of the book to the Chief Secretary to the Government of India along with a covering letter, dated 14 September 1917, which read as follows<sup>10</sup>:

*The author has asked us to solicit the patronage of your Government for the book should you consider it of value. We may mention that the Government of Bengal included it in the list of 'Works of Utility' and it is having a very large sale.*

The method devised by Bose was cost-effective, as he states in the foreword<sup>9</sup>:

*It is with a view to reducing as far as possible (this) inevitable delay before the antecedents of strangers and suspicious characters can be known after their finger impressions have been taken, that this code for telegraphing details of finger impressions at a cost which is not prohibitive has been compiled.*

The first English officer to recognize the utility of telegraphic code for fingerprinting was Sir Charles Stockley Collins of Scotland Yard. His book, *A Telegraphic Code for Fingerprint Formulae*, was published<sup>5</sup> in 1921 – five years after Bose's publication. This was stated by P. C. Bamford of the Intelligence Bureau, while recommending an honorarium for Bose. In a note dated 28 February 1929, he wrote<sup>8</sup>:

*Hem Chandra Basu (Bose) published his code in 1916, and... it has been used in the Bengal Bureau since 1917. Mr. Collins of Scotland Yard published a telegraphic code in 1921, and, in his preface, mentioned that his treatise was originally written some seven years previously. Since he did not publish it till 1921, I think that Rai Hem Chandra Basu Bahadur can claim to be the first in the field with a practical finger print telegraphic code.*

Once the government cleared the honorarium for Bose, a request was made to the Standing Finance Committee to release the grant. S. N. Roy, Esq., I.C.S., Deputy Secretary, Home Department, in a note dated 8 July 1929 wrote<sup>8</sup>:

*This (telegraphic code) was a work involving arduous labour and although Scotland Yard published a similar telegraphic code in 1921 it is noteworthy that the Rai Bahadur's work was the first of its kind.*

Collins pointed out that any recognition made solely by coded information would only supply a 'strong suspicion', which had to be confirmed by comparison of the actual finger impression<sup>5</sup>. This is exactly what Bose wrote five years earlier<sup>9</sup>:

*It is of course intended that in practical working the actual finger-prints would follow by post in confirmation of the telegram.*

After the publication of Collins' book, Scotland Yard adopted the new system. In 1924, it solved the first case using the telegraphic code method. Thereafter, many other cases must have been solved by application of the code system. However, no one remembered or gave credit to Bose, the originator and inventor of the technique.

### Single-digit classification system for fingerprints

The idea of fingerprint code system was to transmit, at a fast pace, the finger impressions of an alleged criminal from one bureau to another. However, it was not practical to telegraph all ten imprints of the person in question. Therefore, Bose modified the existing fingerprint classification formula, which was based on the ridge pattern of all ten digits. Against this, he devised a classification formula based on single-digit impressions.

At the Scotland Yard, Collins made an attempt to devise a single-digit classification system within the framework of his telegraphic code<sup>5</sup>. However, instead of considering each digit as being independent of the others, he filed the slips according to the numerical value produced by the telegraphic coding. Since the code considered the characteristics appearing only in a part of the print, the cataloguing resulted in an arrangement whereby the successive slips had a wide variation in ridge count. This made the searching procedure extremely tedious and therefore the classification method devised by Collins was subsequently abandoned.

In June 1926, Harry Battley took over as Head of the Fingerprint Department of Scotland Yard. With the assistance of Detective Sergeant Frederick Rupert Cherrill, he tried to remove the drawbacks inherent in Collins' classification method<sup>5</sup>. The duo dissected a conventional fingerprint index slip into ten independent collections, one for each digit. During 1928–29, they classified a few hundred slips according to the new method. In 1930, Battley's book, *Single Fingerprints*, was published by Her Majesty's Stationery Office.

Battley perhaps did not realize that he had already been superseded in this endeavour by Bose, who had not only devised the single-digit classification formula much earlier, but had also got it published.

In an Intelligence Bureau note dated 28 February 1929, Bamford wrote<sup>8</sup>:

*I place below my own copy of the 'Finger Print Companion', which I believe to be his (Bose's) latest work. The interesting portion(s) of this book relate(s) to the classification of single digit impressions....*

*Finger Print Companion*<sup>11</sup> was published in 1927 – three years before Battley's publication. Bose's earlier book, *Hints on Finger Prints*, had become so popular that there was a persistent demand to bring out its second edition. In *Finger Print Companion*, Bose incorporated both the newly discovered system of single-digit classification and the reprinted version of *Hints on Finger Prints*. He believed that the combined text would serve as a ready reference on fingerprints. In the preface Bose writes<sup>11</sup>:

*I regret the delay in meeting the demands for my Hints on Finger Prints by getting up a fresh edition earlier, as I was engaged for some time in making researches in connection with the classification of a single digit or chance impression for the purpose of identifying persons who may have unknowingly left any impression when handling various articles, such as, glass, paper, polished wood, china ware &c. It is impossible to express adequately my appreciation of the generous support by Courts, Lawyers and the Police...I trust this new book...will answer the purpose of a ready book of reference.*

Bamford further wrote<sup>8</sup>:

*The value of a single print classification is immense from the point of view of the*

*detection of a crime in which only the prints of one or two fingers have been left by the criminal, and I understand that the Bengal Bureau have, for some time past, been classifying finger prints by this method.*

In the opinion column of his book, Bose solicited comments from a few English police officers. Most noteworthy is that of J. E. Armstrong, Deputy Inspector General of Police, Bengal, who wrote:

*If the Rai Bahadur has indeed made this new discovery in the science of identification by fingerprints, as I believe he has, it will be one more triumph for him and perhaps his greatest.*

While sanctioning the honorarium for Bose, the Standing Finance Committee, during its proceedings of 6 August 1929, recorded<sup>8</sup>:

*During his long service in the Bengal Finger Print Bureau he (Bose) acquired a unique knowledge of the science and introduced various improvements which had been of great use to the police administration not only in India but throughout the world. Particular mention might be made of the system of classification for a single digit impression which had been acknowledged to be a masterpiece of finger print work by many experts in Europe....*

J. R. Blair, Esq., I.C.S., Deputy Secretary to the Government of Bengal, while making a case for rewarding Bose, wrote to the Secretary, Government of India, Home Department (letter no. 650 PI, dated 5 February 1929)<sup>8</sup>:

*The utility of the system of classifying single digit impressions is obvious as it answers to all the conventional standards of proof held by experts as essential for identification. The system has been put to practical test in the Finger Print Bureau and has been found to be reliable. This achievement has been acknowledged to be a masterpiece of finger print work by many European experts and a reference was made to it in the 'International Public Safety' dated the 30th September 1925, the official journal of the International Police Commission of Europe.*

The journal, *International Public Safety*, was in fact a publication of International Criminal Police Commission. In its 30

September 1925 issue, it reviewed the Proceedings of the International Police Exhibition held in June 1925 at Karlsruhe, Baden (Germany). Regarding Bose, the Government Councillor of Germany's Ministry of Interior wrote<sup>12</sup>:

*Rai Bahadur Hem Chandra Bose...recently published a new method for the classification of a single digit impression which, it seems to me, is worth of special attention.... Although it was not possible to present the new method at the International Police Exhibition arranged at Karlsruhe in June last, yet the closer connection formed on the occasion of this exhibition between the police administration of India and Baden offered an opportunity of acquainting wider circles of experts with his method.*

Bose was nominated as Honorary Member of the Police Exhibition Committee. It was during this event that many European experts came to know about the single-digit classification method. It is quite obvious that Scotland Yard would have been represented at the exhibition. The officer(s) would have noted that Bose was able to classify single-digit impressions because, unlike Collins, he treated each digit as differentia. This central idea has also been highlighted in *Finger Print Companion*<sup>11</sup>, wherein Bose writes:

*For the purpose of search under this method in the records of the finger-print bureaux where the impression slips are classified and arranged under the Henry system of 10 digit classification, each of the 10 digit impressions on the record slips is to be classified separately under the single digit system....*

Battley and Cherrill started working on single-digit classification about a year after the police exhibition. The tip-off on digit segregation must have guided them in this endeavour.

Thus while Collins was groping in the dark and Battley and Cherrill were yet to enter the scene, Bose had smartly worked out the classification formula for the single digit impressions. The system had been tested in casework investigations, had been published in a book and had been held credible by an international journal.

## Conclusion

Before we end, we would like to refer to another fingerprint pioneer, Henry Faulds

from the UK, a contemporary of Sir Edward Richard Henry, but who, much like Haque and Bose, did not receive official recognition for his work. Faulds was the first person to point out that the fingerprints remain unchanged during an individual's lifetime. He was also the first person to make use of fingerprints in crime detection. However, for reasons best known to the then British Government, Henry was knighted, and Faulds was left out. That was in the early years of 1900s.

During that time, in 1905, two ruffian brothers—Alfred and Albert Strattons—committed a double murder in London. There was sufficient evidence against the accused, including a fingerprint on the cash box of the deceased. When the case opened in the court, to everyone's surprise, Faulds sided with the defence.

He regarded the fingermark as smudged and cast doubts on its validity. It was obvious that Faulds was acting out of frustration. Nevertheless, the Strattons were convicted of murder and duly hanged. The case left a long-lasting scar on Faulds' faculties. Due to this one mistake, his public image got tarnished<sup>5</sup>.

Now, nearly hundred years later, an International Memorial to honour Henry Faulds is being erected at his birthplace, Beith in Scotland. Dr Henry Faulds Birth Commemorative Society, which has undertaken this task, holds that despite his role in the Strattons brothers case, Faulds is entitled to great credit. Rightly so. However, Haque and Bose did not commit any mis-

take throughout their careers. Their only fault was that they were born in a subjugated country. Yet they were loyal and honest officers. We have already stated that after retirement, Haque was reduced to poverty. Bose met with the same fate. A personal letter, dated 6 December 1929, from a former superior of Bose in the Home Department, addressed to a Deputy Secretary of Finance Department pleads that the honorarium due to Bose be released at the earliest 'as the Rai Bahadur is lying in a critical state (at present) and needs financial assistance very badly'<sup>8</sup>. Such was the pathetic state of Indian officers who worked out a set of methodologies that were later adopted by all the civilized nations of the world.

We do not want a memorial for Haque and Bose (not, at least, at this stage). We only desire official recognition for their pioneering work.

1. Brooker, D. R., *Fingerprint World*, October 1977, pp. 25–27.
2. Berry, J., In *Advances in Fingerprint Technology* (eds Lee, H. C. and Gaensslen, R. E.), Elsevier, New York, 1991, pp. 1–38.
3. Haylock, S. E., *Fingerprint World*, July 1979, pp. 28–29.
4. Identification of Criminals Committee, 1900, Report of a Committee appointed by the Secretary of State to inquire into the method of identification of criminals by measurements and finger prints, Her Majesty's Stationery Office, London, 1901.

5. Lambourne, G., *The Fingerprint Story*, Harap, London, 1984, pp. 60–64.
6. Puri, K. S., *Fingerprint World*, July 1980, pp. 21–22.
7. Home Department Proceedings No. F. 112/25, Police Branch, 1925.
8. Home Department Proceedings No. F. 14/29, Police Branch, 1929.
9. Bose, H. C., *Hints on Finger-Prints with a Telegraphic Code for Finger Impressions*, Thacker Spink and Company, Calcutta and Simla, 1916.
10. Home Department Proceedings No. 141-142(B), Police Branch, October 1917.
11. Bose, H. C., *Finger Print Companion*, Gaudiya Printing Works, Calcutta, 1927.
12. *International Public Safety*, International Criminal Police Commission, 30 September 1925.

ACKNOWLEDGEMENTS. We thank Indian National Science Academy, New Delhi for sanctioning a project on the history of science of which the present work is a part. Thanks are due to National Archives of India, New Delhi for providing Home Department records for survey. We also thank Mr John Berry, Hertfordshire for sending relevant literature.

G. S. Sodhi\* is in the Department of Chemistry, S.G.T.B. Khalsa College, University of Delhi, Delhi 110 007, India and Jasjeet Kaur is in Shaheed Rajguru College of Applied Sciences for Women (University of Delhi), Jhilmil Colony, Delhi 110 095, India

\*For correspondence.  
e-mail: sodhigs1@rediffmail.com