

## Some child prodigies I have known

Paul Erdős

I was always interested in child prodigies perhaps because I was one too. My parents were both mathematicians and I learned a great deal of elementary mathematics from them. My first discovery was when I was 4 years old and I told my mother that if you take away 250 from 100 you get 150 below zero. I wrote my first paper when I was 18 which is early but Dóra one of my child prodigies wrote one of his important papers on Hamiltonian cycles in graphs when he was 15 &  $\frac{1}{2}$  and these type of theorems are still known as Dóra type theorem. Not all mathematicians were child prodigies e.g Weientrass and Hardy were not prodigies but Gauss and Norbert Wiener certainly were. There are many prodigies in mathematics and music but very few in literature. I know of only one in poetry, Rambeau, who wrote poetry when he was between 10 and 19 and never wrote later.

I feel it is important to recognize talent as early as possible and give them all possible encouragement and help without trying to push them Norbert Wiener in his autobiography complains fairly bitterly that his parents pushed him.

Several details will be given about my contacts with prodigies and I will try to keep the decision as non technical as possible. I mention here only one fact. I met Dóra at lunch when he was less than 12 years old, while he was eating his soup I asked him the following problem:

Let  $1 = a_1 < a_{n+1} \dots 2n$  be  $n+1$  integer not exceeding  $n$ . Prove that there are two of them which are relatively prime. When he finished his soup he just remarked two of them are consecutive. Needless to say I was very impressed and since then I worked a lot with him.

Our first substantial joint paper was written before he was 15 years old.

Konsberger a Canadian mathematician, wrote a nice book entitled *Mathematical gems*. One of his chapters is entitled the “Mathematician Louis Dóra. This date is (data are) described in the book. The reviewer in *American Mathematical Monthly* writes: “Champaign (Champagne) would have been more appropriate than soup”.

Finally let me finish with an anecdote. Edison the great inventor once said “Genius is one percent inspiration 99 percent perspiration (i.e hard work).

This is certainly not so for Mathematics. On the other hand one’s “brain must be open” i.e receptive if a new idea comes along –the opportunity for a big discovery may not return. The following I think true story shows what happens if one’s brain is not open. In 1895 Röntgen noticed that if you leave a photographic plate near a Crookes tube the plate darkens, he realized that this observation is important and for a few weeks he worked only on this. These weeks changed the world. He discovered Röntgen (or x-rays), radioactivity soon followed and the world was never the same, in fact, it is unfortunately not yet certain if we will survive it.

Later it turned out that Crookes made the same observation, but he only deduced, do (did) not leave a photographic plate near a Crookes tube. His brain was just not open, I sometimes call this the biggest mistake in history.

*Courtesy : R. L. Brahmachary, Professor, Embryology Unit, Indian Statistical Institute, Kolkata, India.*