

CURRENCY NEWS

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Bank of England to Sell Print Operation to De La Rue

The Bank of England is negotiating to sell its printing operation at Debden in Essex (near London) to De La Rue. The deal will involve the sale of printing machinery and a seven-year contract to produce the Bank's annual note requirement. It will also include provisions for changes of specification to cover the production of euro notes should the UK join the common currency at any time within the seven-year period.

The Bank currently produces around one billion notes per year (down from 1.4 billion per year ten years ago) at a cost of £31M, and employs 450 people, which has fallen from 1,200 a decade ago. Around 250 of these are employed in banknote production, and the remainder in the Bank's note sorting and distribution operations. The sale of the printing operation is intended in part to secure the positions

of the existing staff and avoid further redundancies by increasing turnover and throughput from outside work. This is currently forbidden under the Bank's Charter of 1694, which is still in place.

The decision to sell the printing operation follows a review of the £50M-turnover business that began in early 2002, under which three options were considered. One was to maintain the status quo by retaining ownership and printing notes exclusively for the Bank, but this was rejected as further job cuts would be required. The second was to retain ownership and control but take on commercial work while remaining in public hands: this option was also rejected due to over-capacity in the commercial banknote printing market. The third option, and the one chosen, was to sell the printing operations to a

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ECB Considers Introduction of €1 and €2 Notes

The European Central Bank (ECB) is considering the introduction of new lower denomination banknotes. Consumers have complained that the loss of their national low denomination banknotes has given retailers the opportunity to increase prices since the introduction of the common currency last January.

Currently, the lowest denomination banknote is the €5, with denominations of €2 and below in coin. Psychologically, consumers attribute a higher value to notes than coins and therefore tend to spend them more reluctantly. Apparently, shopkeepers have capitalised on

this undervaluation of coins by raising prices. A large price hike in Greece prompted a four-day consumer boycott of shops and markets, while Italy also claims that euro cash has pushed up the cost of living there, although EU statisticians claim that prices have not been affected.

In addition to Italy and Greece, the central banks of Belgium and Austria have also signalled that they favour small denomination notes, as has the German Bundesbank. It is understood that many of the ten accession countries would also favour small denomination notes. The

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EDITORIAL

Communication in the Global Village

Welcome to the first issue of Currency News, published by Currency Publications Ltd, a joint venture between Reconnaissance International and Currency Research Ltd. We aim to provide a vehicle for communication, information and exchange within the currency community, and so facilitate the development of this field.

Currency has taken thousands of years to evolve and yet in the early part of the 21st century it is changing faster than ever. From bronze age coins, through the invention of paper and its use for bills of exchange, to the introduction of banknotes, currency has been central to the development of society, commerce and trade.

Today, currency as perceived by the general public - primarily in the form of coins and banknotes - is the domain of a system that first appeared in the 19th century in Western Europe and North America. Central banks have been responsible for issuing and controlling their national currency, produced within state-owned print works or supplied by one of a handful of long-established specialist security printing companies. These organisations have formed a close-knit community, rightly guarding and restricting the proprietary techniques used to produce banknotes in a form which makes them difficult to copy.

But as currency evolves, so the community involved professionally with it needs to adapt and itself evolve. Currency now exists in many forms, physical and electronic, and involves governments and commercial businesses in its design, production, distribution, management and destruction. The established relationship between central banks and commercial organisations that has served for over several centuries is changing, prompted partly by politico-economic moves to privatise and partly by the need for rapid, effective change in a previously slow-changing field. At a time when some countries are joining together and using a common

currency, other nation states are either adopting another country's currency or, conversely, asserting their identities and independence more than ever, viewing their currency - naturally - as one of the most visible signs of that identity, and wanting more control over all stages of its life.

In this dynamic climate, communication and information help all members of the currency community to understand and respond to these changes. Currency News will thus contribute to, and be the means for, greater communication within this community. Communication brings greater knowledge which in turn means greater

understanding, strengthening its component parts and therefore the whole. This can only help the community in a time of rapid change and many challenges.

Yet there is a balance, especially where currency is concerned. Com-

munication does not mean revealing information that should be kept confidential; nor does it mean disclosing commercial secrets or proprietary information. The people and companies involved in Currency News have the experience and track record to know where the lines need to be drawn and we will do our utmost to ensure that they are not crossed.

In 1964 Marshall McLuhan - well ahead of his time - coined the phrase 'the global village'. The currency community plays a central part in what is now the reality of that village. In launching a newsletter dedicated to currency at this time of change, we hope you will recognise and contribute to the role that Currency News can play in the evolving currency community.

*As currency evolves, so the
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ECB To Introduce €1 and €2 Note... cont'd

setting of the coin/note boundary caused some controversy when the euro was specified, particularly from those countries where high volumes of low denomination notes in their own currencies were the norm. The welding together of 11 different countries' customs and traditions into one currency series was inevitably a compromise which is now being forced back onto the ECB's agenda for discussion.

There are nearly three billion €1 euro coins in circulation. The replacement of the coins with notes would be costly, particularly as coins stay in circulation for many years, as opposed to low denomination notes which tend to have an

average life of months. The cost of printing a replacement number of €1 notes would be in the region of €150-180M, with annual replacement costs of possibly half that amount.

Some of those proposing the introduction of the note, however, believe that the problem could be overcome by circulating coins and notes in tandem - an unusual step and potentially an unsuccessful one, if the US experience with \$1 dollar coins is anything to go by (the Susan B Anthony, or Susie B, \$1 coin was introduced in 1979 to circulate alongside the \$1 bill. Its replacement, the Golden Dollar or Sacagawea, was introduced in 2000.

Neither, however, has received much enthusiasm from the US public). Another solution could be to introduce a €2 note as well as or instead of the €1 note.

If cost is the major barrier to notes replacing coins, it would be possible to almost double their life by introducing long-life papers equivalent in standard to that used for the US\$1 notes, which have an average lifespan of 20 months. Another long-life alternative could be the use of polymer substrates.

It is highly unusual for notes to replace coins - the reverse is usually the case. But then again, the euro is no ordinary currency.

TECHNOLOGY PROFILE

Document Security – Hanging by a Thread

The integrity of many of the world's most valuable bearer documents is hanging on a thread.

Security threads were first used to secure banknotes in the mid 1800s, the first patent being issued to Crane and Co in 1867. The invention involved the embedding of coloured silk threads into banknote paper, the number and colour of these differentiating the substrate. Early in the 20th century platinum wire was embedded into banknote paper to provide tangible backing for a note's value. The major breakthrough came in the late 1930s with the use of polymeric film (the base substrate of all threads used in banknotes today) when the Bank of England embedded threads into banknote paper. This was to protect English currency from the threat of large-scale 'economic sabotage' counterfeiting by the Third Reich. Since then the use of security threads as a method of validating a genuine document has become widespread.

Over 80% of the world's banknotes now incorporate security threads and, as the requirement for fail-safe verification increases - either by the general public or by sophisticated high-speed sorting machines - the thread is taking on new levels of importance and sophistication.

The Early Days

At its most basic level - a plain strip of polymeric film 0.5mm wide - the security thread was an overt and simple check that a document may be genuine. This thread was invisible by reflected light but appeared as an opaque strip when viewed in transmitted light, especially when metallised film was used. A common check by the public was to tear the banknote at the edge across the area of the security thread to check that the thread was 'real.' The issuing banks did not encourage this practice!

In the 1960s, paper makers - in particular Portals - developed the security thread into a more sophisticated security device by printing it and subsequently slitting it in register, or doping the plastic with coloured or UV fluorescent pigments. Gradually more issuing authorities adopted security threads but it was not until the early 1980s, when the so-called windows thread was developed, that the true potential of the security thread was realised.

Seeing the Light

Based on an original invention by the Bank of England Printing Works, windows thread was conceived as a 'woven' thread that would appear through the front and reverse of the paper sheet.

The concept was adapted by Portals into a single sided feature - *Stardust*® - whereby the thread emerged intermittently only through the topside of the sheet. This overcame process and paper strength problems and allowed commercialization of the technology.

At about the same time as the windows thread emerged, development engineers were looking for reliable methods of automatically validating documents. Polymeric security threads proved to be a consistent and resilient 'vehicle' on which a wide variety of machine detectable features could be carried. These took the form of magnetics, optics and electrical conductivity.

A limitation to using the thread as a data- or signal-carrier is that it nearly always runs parallel to the shortest dimension of the document, minimising the contact time with the sensor. In high-speed reader/sorters this restricts the type of feature/reader interface that will operate. Nevertheless, today's sorters can read threads at speeds of 120,000 notes per hour.

Threading the Needle

For the public, the most obvious changes in the appearance of security threads over the last twenty years have been its emergence from within the paper (windows), the use of demetallised text and graphics in positive and negative form and the use of overt optical devices

For these security devices to be of most use to the public, the thread needs to be highly visible, and therefore wide enough to see easily. This requirement for wider threads has resulted in changes to papermaking technology, and today, some of the major banknote paper makers use 'twin-formers' which first form a thicker carrier-sheet containing the watermark, followed by a top-sheet which is 'layered' on top of the carrier sheet with the security thread - either embedded or 'windowed' - in between. Thus, security threads 3-4mm wide can be incorporated with little or no reduction in paper strength.

Now that threads can be more easily seen, there are opportunities to use sophisticated optical features such as holographic and colour shift films, either on their own or combined with *Cleartext*® or *Comet*® demetallisation (the intellectual property of Portals and Crane respectively). Machine read features such as magnetics may also be included, such a thread offering public overt, forensic covert and machine verification in one product. In this version the intellectual property for Cleartext lies with Giesecke and Devrient (G&D), and for Comet with Crane.

Where Is This Thread Leading?

The German and French trend towards surface mounted 'threads' or stripes (G&D's *Longlasting Economic Anticopying Device* - LEAD® - and Banque de France's *System To Resist Against Photocopiers* - STRAP) resulted in a diffractive (holographic) stripe being specified for low denomination euro notes. However, this surface use, while being highly visible, suffers from the disadvantage of limited durability. Consequently, the wider, more viewable and durable windows thread could well prevail.

Traditionally the preserve of the cylinder mould-made paper maker, security threads are now being embedded into paper on fourdrinier paper machines. This should expand both their use and that of fourdrinier paper.

Materials science and technology will be the limiting factor in security thread development. In the future it is possible that security threads using laminates of piezzo-electric and electro-luminescent layers will 'light-up' as pressure is applied, and electro-polymer micro-circuitry will permit the construction of durable 're-chargeable' banknotes. Theoretically micro-wave aerials could be built into security threads to track individual notes, or 'instantly' count the value of a stack of currency and verify if any notes are counterfeit.

Counterfeiters and their technologies are becoming more sophisticated, and security threads - in combination with other substrate, design, surface-applied and printed features - have the capability of meeting this challenge.

In the world of document security, they certainly won't lose the thread!

CASE STUDY

The Bank of England and the New £5 Note

There is a much-used saying which goes 'if it can go wrong it will'. Nowhere was this more apparent than with the new sterling £5 note which, despite two years of development and extensive testing by the Bank of England, was withdrawn within days of its introduction last May. This case demonstrates how, within the highly complex and finely-tuned banknote production process, even the slightest alteration to tried and tested production methods can have a dramatic effect on the overall performance of the end product.

The new note, the lowest denomination for England and Wales, has a circulation of 210 million and, prior to its redesign, a lifespan of approximately nine months. To bring it in line, in public recognition and security terms, with the £10 and £20 notes (both redesigned within the last two years) and to increase its longevity, a range of new features were added. These included a hologram, windowed thread, microlettering and, unique to the £5 note, an anti-soiling varnish. It was this varnish, designed to increase the notes' lifespan in circulation by at least another three months, that was at the root of the problem.

Protective Coating

Developed in-house by the Bank, this varnish was applied at the penultimate stage of production, prior to the serial numbering of the notes. It provides a protective coating to the paper and all the print and security features except the new hologram (for which an unvarnished patch was provided to optimise the hologram's diffractive properties).

Any coating or varnish designed to act as a seal preventing the adhesion of dirt was bound to have a similar effect on the numbering ink. To compensate for this, the pressure on the numbering stations (sheet-fed Numerota presses with numbering boxes from Atlantic Zeiser) was increased to enable the indelible magnetic ink to penetrate the varnish and adhere to the paper beneath. However, once full production began it was found that the displaced lacquer began clogging up the numbering boxes, necessitating frequent cleaning.

Altering the Balance

At this point, it is understood, some press operatives are believed to have reduced the pressure on the numbering boxes to alleviate the problem of lacquer build-up. The result, however, was insufficient adhesion of the numbering ink, which sat on top of the varnish instead of penetrating it. This was not picked up by post-print inspection, and only became apparent once three million notes had gone into circulation. The problem is believed to have affected less than 10% of the new notes printed, but led to a rapid recall. The notes already printed were treated to enable the ink to dry. To overcome the problem in future and increase productivity by eliminating the build up of the varnish, this is now being applied after the numbering process. The notes were reintroduced in August with those affected weeded out, all at an additional cost of £250,000.

With an estimated 60% of £5 notes withdrawn from circulation due to soiling rather than any other factor, attempts to improve resistance to dirt made sound commercial sense. Indeed, the experience of countries such as the Netherlands, Belgium and Switzerland, all of which have applied protective varnishes to their notes in the past without any problem, both above and below the serial numbering, would indicate the logic of this step.

Put Numbering Last

But there is a school of thought that says it also makes commercial sense to make numbering the very last process before single note inspection. Although some countries apply the serial numbering at the beginning of production to facilitate batch control, these are in the minority. For most issues, serial numbering is the final stage with only a minority of notes subsequently filtered out at single note inspection.

If nothing else, the Bank of England's experience with the £5 note demonstrated two rules of business. One is that 'if it can go wrong it will' and the other is that old-fashioned human error (in this case the attempted ingenuity of the press operatives) can send the best laid plans made with the best of intentions awry.

New Currency Centre in Shanghai

Productivity Systems International Inc (PSI), of Georgia in the US, has signed a contract with the People's Bank of China to design the world's largest currency centre in Shanghai. The site for the new Shanghai Cash Management Centre will extend to approximately 2.7 hectares and will integrate existing and new automated and manual vaults, cash processing and destruction systems, high security truck and rail docks with advanced security and control systems for all of the operations. The new complex, one of several in China, will ultimately store over 45,000 pallet or container loads of banknotes and coins. Construction starts this year and will take three years to complete.

Over the past 15 years, the automation of cash operation centres in terms of banknote and coin handling, storage and processing has become more commonplace amongst central banks looking to reduce costs and improve operating efficiency. Using automated storage and retrieval systems, guided vehicles and conveyers linked by centralized control systems are able to manage and track the movement of notes and coins throughout the centre, improving security and requiring minimal manual intervention.

PSI has already worked on 17 Federal Reserve Bank projects in the US, two cash centres for the Bank of Canada and the combined print works and treasury building under construction for the Banco de la Republica in Bogota, Colombia. It has also recently completed a review of the banknote and coin operations for the Banco Central do Brasil. This entailed an analysis of the latter's note and coin functions from raw materials, through production to storage, distribution, processing, and destruction with a view towards increasing cost effectiveness and enhancing productivity.

Contact: PSI. Phone + 1 770 831-1771; www.productivitysys.com

KEY PEOPLE & HISTORY

PEOPLE IN THE NEWS

- Giesecke & Devrient has announced the retirement of Jürgen Nehls from its board, and the appointment of Peter Eisenbacher, formerly of IBM and TDS AG. He will have specific responsibility along with fellow Board member Franz Haniel for the group's card business, which is being restructured.
- Bundesdruckerei has appointed Ulrich Wöhr as Chief Executive Officer and Dr Gereon Mertens as Chief Financial Officer. The new Chief Operating Officer is Moritz Gerke and Rudolf Jung has been appointed Production Director for banknotes.
- Venezuela's Casa de Moneda has a new President - Jose Luis Marco Fernandez.
- Charles Freedman will retire as Deputy Governor of the Bank of Canada as of September 2003. He assumed the post in 1988.

Arkadiy Trachuk

Arkadiy Trachuk, formerly Goznak State Enterprise's Deputy General Director and Head of Finance and Administration, has been appointed General Director. Arkadiy, aged 36, graduated from the Leningrad Institute of Aircraft Instrumentation in 1989, and completed a postgraduate degree in finance in 1991.

He began his career with the enterprise Pulse of St Petersburg, followed by a term as Head of Department and Deputy Director of the St Petersburg branch of Elektrobank. He was also Vice President and later President of Petroenergobank and joined Lenenergo in 1997 as Deputy General Director, Economy and Finance. He was promoted to head of Department in 1999 before joining Goznak in 2001.

Whatever Happened to... DuraNote?

DuraNote was widely regarded in the late 1990s as a superior second generation polymer banknote substrate. Since then, however, the company that developed it seems to have disappeared from the world banknote scene.

DuraNote began life as a product development of Mobil Films Division in the early 1990s, becoming a limited liability company of the same name in 1998 as a joint venture between Mobil and Agra Vadeko, based in Rochester, NY, and headed by Al McKay, formerly deputy governor of the Bank of Canada.

It was launched in competition to *Guardian*® - the polymer banknote substrate from Securrency, the joint venture between Note Printing Australia (NPA) and UBC Films. A special feature was its print cap layer which enabled the ink to penetrate and better adhere to the polymer. As a result, no protective topcoat was needed - unlike *Guardian* - and the printed notes retained the distinctive feel of intaglio traditionally associated with paper banknotes.

However, whereas the *Guardian* polymer was backed by the Australian government and was able to obtain market share through high profile marketing and the support of NPA,

DuraNote lacked a similar support infrastructure. It did not enjoy the backing of a banknote printer and worked on a limited manufacturing and promotional budget, with most of its staff seconded from its parent companies.

One of these parents - Mobil - was then acquired by the Exxon Corporation. When the first order for DuraNote was obtained from an Asian central bank, the decision was made that the Corporation preferred not to be in such a high profile business as banknote substrates, or to risk its existing film and hydrocarbon products business by selling a new and relatively untried product.

The DuraNote know-how, licences and patents were then offered for sale to selected industry players in the form of a technology transfer, but by this time the conventional banknote paper makers had launched their own durable and soil resistant substrates, and felt that the polymer 'threat' was over. DuraNote LLC still exists as a company, but is not actively promoting its product, leaving Securrency as the sole provider of polymer as an alternative banknote substrate to paper.

Bank of England to Sell to De La Rue... cont'd

third party with a supply contract to cover the Bank's requirements, but to keep the print works as a whole under the Bank's ownership as a secure site for note distribution.

Companies invited to tender for the business are believed to have included Oberthur, Giesecke and Devrient, Enschede and Crane, while the experience of Apax Partners, which lost €180M on its acquisition of the German State printer Bundesdruckerei, is likely to have deterred venture capitalists. De La Rue was selected for negotiations because it offered the highest price in the tender and the best prospects for the staff, although nationality undoubtedly played a part. Another factor could have been the longstanding relationship between the two through Portals, which has been the exclusive supplier of paper to the Bank since 1712 (ironically, as recently as October the Bank issued a tender for the supply of all of its banknote paper for the first time in its history, in an effort to reduce costs).

Amongst the member states of the EU, the Bank of England's printing operations are only the third to be fully privatised - following Tumba Bruk of Sweden (which was sold to Crane in 2001) and Bundesdruckerei, bought by the German arm of UK venture capitalists Apax in 2000 and now back in German hands. The print works of Belgium, Spain, Italy, France, Ireland and Greece remain state-owned but, unlike the Bank of England, many already pursue commercial banknote business to complement their euro production.

The acquisition of the Bank's printing operations will bring the total number of printing plants under De La Rue's ownership back up to five, following the closure of its Singapore plant in 2002. The other four factories are based in the UK, Malta, Kenya and Sri Lanka. The UK facility - at Gateshead in the northeast of England - will operate as a separate facility from Debden and will focus on specialist short-run export work.

The deal between the Bank of England and De La Rue will be finalised in Spring 2003, subject to regulatory approval, and the price will be based on the net asset value of the banknote printing operations.

ON THE RECORD

Antti Heinonen, European Central Bank

The introduction of new euro banknotes on January 1, 2002, described as the biggest peacetime logistical exercise in post-war Europe, was hailed as an unqualified success. Currency News talked to the man who played a key role in this introduction, Antti Heinonen, Director of Banknotes for the European Central Bank. Mr Heinonen joined the ECB in 1998, after serving as Chief Cashier of the Bank of Finland. He is also Chairman of the European System of Central Banks (ESCB) and was Chairman of the Eurosystem Cash Changeover Committee.

CN: The launch of the euro went off very successfully, in terms of logistics and public acceptance, for which congratulations are due. What would you draw from it to advise other countries which might be making new currency issues in future, including the accession countries?

AH: Thank you! I think there were two major explanations for the success: first, the good preparation and involvement of all parties from the beginning and, second, the excellent reception to the euro banknotes and coins by European citizens.

Third-party cash handling organisations - such as banks, retailers, cash-in transit and the vending industry etc - were critical to this success. The ECB started so-called third party meetings at the European level in October 1997, while similar preparations were made at the national level. First tests with the euro banknotes were arranged for the industry more than 20 months before the launch and the security features were disclosed to the general public four months before E-day. Naturally, long lead-times involve risks, but they should be balanced with the benefits the early involvement gives.

The situation in future accession countries is different, in view of the fact that euro banknotes and coins are already available, but one issue they should take into account is the pace with which the cash changeover could happen. People are normally unwilling to handle two currencies at the same time and, given the good reception of the euro by the public, the massive withdrawal of the legacy currencies in a short time created some bottlenecks.

CN: How much involvement in the design and specification of the note was there by these third parties?

AH: The design and specification were driven by all of the normal parameters including the needs of third parties who made their inputs known to us through various routes. The new notes were subsequently extensively tested at a

number of stages in the process with all players who wished to be involved.

CN: One issue that was much discussed before the launch was the challenge of harmonising quality with so many paper mills and printers producing the notes; to what extent have such potential variations been an issue?



Antti Heinonen

AH: The wide range of suppliers and printers meant that we focused on the consistency and harmonisation issues at an early stage in the project. I am pleased that this work was successful and the potential variation is not an issue. However, that does not mean that we are complacent; in the post-launch period we are monitoring both our specification and processes with a view to continuous improvement.

CN: What is the cost of production of euro notes, including all features?

AH: The cost varies across denominations but a good average guide figure is significantly less than 10 euro cents per note.

CN: In your paper at October's Currency Conference you referred to 'decentralised pooling' in production; please explain this and its implications for future production.

AH: Decentralised pooling means that each denomination will be supplied by a small number of print works and each national central bank will be responsible for procuring normally no more than two

denominations. This arrangement enables the Eurosystem to benefit from economies of scale in banknote production and it helps to ensure a supply of consistent-quality banknotes by reducing the number of production sites for each denomination.

CN: What was the thinking behind the euro note/coin boundary and is there a likelihood of adjusting it in future?

AH: The euro banknote/coin boundary was fixed in November 1994 by the European Monetary Institute (EMI) Council following the consideration that the primary objective was the proper functioning of the future payment system. The EU Member States at that time used banknote denominations ranging in their values from less than €1 to more than €500. The sequence was 1:2:5. As the high denominations (€200 and €500) amounted to a considerable share of the banknotes in circulation in some countries, it was felt that preference should be given to high banknotes rather than very low denominations.

The latter could be accommodated by putting coins into circulation. Issuing both low and high denomination banknotes according to the 1:2:5 sequence would have resulted in nine instead of seven different denominations. That would not have met the objective of a proper functioning of the payment system as the discrimination of so many different banknotes by the users and in the banknote handling machines would have been significantly more difficult. This was especially true as the banknote users would need to get acquainted with a completely new series of banknotes.

There have been voices recently pleading for the introduction of very low value euro banknotes. Although the ECB has no immediate plans for issuing them, it is assessing the implications of such a decision if it were to be taken.

(See front page story for developments since this interview).

ON THE RECORD

CN: What is the planned cycle of new issues for the euro, and will there be any amendments to the notes short of a full new issue?

AH: The lifetime of a banknote series has decreased recently to something like 6-8 years given the high speed of development of reproduction technologies. Clearly we have extensive plans for the future and upgrading is one of the possibilities. The precise implementation of an upgrade or new design will depend on how the current design performs in circulation. As the euro is a new currency, measuring this performance accurately and using it for decision making will need more circulation experience than we have currently.

CN: One of the successes to date can be seen in the low incidence of counterfeit euros, especially compared to the incidence of counterfeiting of the replaced national currencies; to what do you ascribe this?

AH: The resistance of the euro to counterfeiting is no accident, but is attributable to a number of different factors. First, there is a good mix of security features, both in the paper and in the print. Security features, by definition, are difficult to reproduce accurately, and counterfeiters will tend to attack the easier targets rather than the more difficult ones. The features used are the result of a consensus of anti-counterfeiting experts from all over the EU. Second, an extensive publicity and information campaign with features aimed at both business and the private individual was carried out before the launch. Third, there was an enormous amount of interest from the public, because the launch of the euro banknotes and coins was an unprecedented event in history. Thus, the public were probably better prepared for, and more familiar with, the euro than with any previous currency.

However, it is also true that whenever a new banknote or coin is issued, the level of counterfeiting of that denomination drops considerably and then subsequently increases gradually. The rate of counterfeiting of the euro, although still comparatively low, is beginning to show signs of increase so the ECB is not complacent about the situation.

CN: The euro probably has one of the fullest sets of anticounterfeiting features on any banknote in the world; this could mean that there is redundancy in these features or that it is

difficult for the public to remember them; is there a likelihood of reducing this feature set in future?

AH: Yes, the euro does have a very full set of anti-counterfeiting features and they are well supported by our information campaign for authentication - 'Look/Feel/Tilt'. This campaign was successful in that post campaign testing indicated that the public generally did not have problems remembering the 'Look/Feel/Tilt' features. Future decisions on features will be made considering both the technical environment and the information obtained from the monitoring of performance in circulation I mentioned earlier.

CN: Is there a mechanism in place for advising accession countries on their production and processing requirements pending their entry into the euro? And will production be extended into any of the accession countries?

AH: Part of the accession process is advising the candidates across a wide range of technical and operational issues and this process is ongoing. However, at this early stage, we are not in a position to make detailed arrangements regarding the future production of euro banknotes.

CN: Mr Heimonen, many thanks for your time and insight.

GM Cotton Used in Euro

The euro banknotes are printed on paper made with genetically-modified ((GM) cotton, according to scientists in Switzerland and Germany. One of the main sources of the pure cotton used in the euro notes is the US, where 75% of the cotton crop is transgenic and where farmers and wholesalers do not separate conventional and GM cotton.

Although the European Union has some of the toughest GM regulations in the world, the ECB does not have a procedure for tracing the origins of the fibres in its banknotes and GM cotton will undoubtedly have found its way into most, if not all of them.

Further information on this controversial subject will be in the next issue of Currency News.

Counterfeit Corner

- Greece: authorities have confirmed that large numbers of counterfeit €20, €50, and €100 notes have been circulating in various parts of northern Greece since spring 2002.

- Korea: nearly 2,000 counterfeit banknotes were intercepted between January and August, almost twice the figure of a year ago.

- UK: £150M worth of counterfeit £10 and £20 'Clydesdale' banknotes are said to be circulating in Scotland. The fakes contain a security thread that allows them to fool sorting machines.

- Euro: over 400 cases of euro counterfeiting were thwarted and 21,965 notes seized in the first six months of 2002, according to the ECB's first biannual statement on trends in euro counterfeiting. The number of notes intercepted represents less than 7% of the total number of counterfeits of national currencies previously found in member countries during the same period in 2001. The preferred target of the counterfeiters was the €50, which accounted for 65% of all the counterfeits seized.

Australia has seen its first euro fakes. Eight counterfeit €100 notes were uncovered by the ANZ bank following the issue of two of these to a tourist who, on unwittingly presenting the notes on her arrival in Frankfurt, was arrested.

- Russia: counterfeiting is said to have increased more than 50% in the first seven months of 2002. US dollars made up 96% of all counterfeit notes seized.

- Japan: 5,420 counterfeit ¥1,000 banknotes were intercepted by Japanese authorities in the first six months of 2002 - a 70% increase since the previous year. 98% of the fakes were found in vending machines with a significant amount passing through ATMs undetected.

- Uganda: substantial quantities of counterfeit U.Shs1000, U.Shs5000 and U.Shs10000 have been seized within a year of these being upgraded by the Bank of Uganda - the quantity discovered rising from 6.5 million to 17.3 million shillings.

SPECIAL FEATURE

US Notes Travel South In Latin American Dollarization

A growing number of countries have opted to eliminate their own national currencies in favour of the US dollar, in a process known as *dollarization*. South America has seen dollarization enacted in the last two years in Ecuador and El Salvador, while Panama has always used dollars. Puerto Rico and a number of others have unofficially dollarized, meaning dollars are widely accepted, but are not the government-sanctioned currency. And most recently Costa Rica and Argentina have toyed with the change.

The US notes do not simply appear on the doorstep of a central bank. The amount of currency must be assessed, requested, distributed and circulated in a complex web of fiscal policy and security measures. Individual commercial banks in the US run subsidiaries to handle the transfers under licence from the US Federal Reserve, which sets how much is to be sent and negotiates the amount and rate with the dollarized country.

Standards Laid Down by Federal Reserve

The average lifespan of the \$1 bill is 20 months. Like other governments, the US government replaces worn-out notes and coins free of charge. Kurt Schuler, senior economist for the US joint economic committee, said \$5 bills also wear out as quickly as singles, but with higher denomination rises, the damage decreases. Fitness standards for all the denominations are laid down by the Federal Reserve and all notes are returned to the US for destruction.

It is rumoured that, in some countries, the exchange of notes has brought literal meaning to the term *money laundering*. When central banks return damaged notes they are issued with a letter of credit until the money is replaced but, in volatile economies, such letters are not as reliable as hard cash, nor can they be listed as assets. In order to minimise the number of notes exchanges, notes are literally placed through laundry machines and cleaned!

According to Schuler, some dollarized countries do not issue domestic currency at all, while others,

such as Panama, issue it in a secondary role. Panama has a unit of account called the balboa equal to the dollar and issues coins but not notes. In practice, there is no difference between the balboa and the dollar; the balboa is simply the Panamanian name for the dollar.

29 countries today around the world officially use the US dollar or some other foreign currency as their predominant currency (mostly, but not entirely, dependencies or former colonies whose size does not justify having their own currency).

Countries opt to use US currency for a variety of reasons, mostly centering on its stability. By going to the dollar, a country in essence relieves itself of its central bank and instead relies on the fiscal policy of the Federal Reserve. In turn, however, they stand to lose decision-making powers to adjust the currency in the event of economic crisis. They also may face resistance from their local population because of issues of national pride.

Advantages to the US

The advantage of dollarization to the US, meanwhile, is that it strengthens and facilitates trading ties with the countries in question, which also tend to adopt US systems for economic projections and commercial law. The US does not charge for the transfer of dollars - partly as a courtesy to dollarized countries (many of whom are large banking customers) and partly because, with the elimination of falling exchange rates, there is less risk on the secured loans which comes with dollarization.

According to Mark Falcoff of the American Enterprise Institute, dollarization is already well along in Latin America. The dollar has been Panama's official currency since the country gained its independence from Colombia in 1904. And, on an informal basis, the dollar is the effective currency of the Anglophone Caribbean, much of northern Mexico and even Cuba. If Argentina moves from informal to formal dollarization, it may be marking a new path for much of the region, said Falcoff.

In 1994, El Salvador said that it intended to proceed directly to official

dollarization. It dropped the plan in the face of opposition to eliminating a symbol of national identity. But in December 2000, after a series of governmental changes, the country passed a law adopting dollars as the official currency in place of its colons. Critics argue that the decision was made hastily without adequate study as to the effects.

In Ecuador, the dollar has replaced the sucres. In Costa Rica, meanwhile, the president of the central bank has expressed interest in official dollarization, and a deputy in the Costa Rican Congress has introduced a bill to abolish the central bank. The finance minister of Guatemala has also said that his country is considering adopting dollarization within the next few years.

Widespread Unofficial Dollarization

By dollarizing, countries stand to lose the ability to conduct desirable monetary policy changes. Before its recent economic crisis (which dropped its peso to four to the dollar) Argentina had a fixed exchange rate with the dollar at one Argentine peso for \$1. The country still holds dollar reserves for immediate official dollarization if it wants. Argentina has permitted widespread unofficial dollarization, to the point that most bank deposits and loans occur in dollars.

Schuler said that although an officially dollarized country cannot respond to economic shocks (such as an increase in the price of oil) by altering the exchange rate of its currency, it still has other methods of adjustment at its disposal: flows of capital into or out of the country to offset the shock, changes in the government budget, and changes in prices and wages. Only time will tell whether the advantages of dollarisation outweigh the disadvantages or vice versa. And only time will tell whether the dollar remains the choice of developing countries looking to stabilize their currency, or whether other non-fluctuating currencies, such as the euro, take its place.

www.dollarization.org,

www.imf.org,

www.worldbank.org.

COUNTRY PROFILE

Kosovo Rebuilds Currency Infrastructure

Each issue of Currency News will feature profiles of countries or regions in which, due to their size or other factors such as political, economic or social instability, the payment and currency systems face particular challenges.

The first profile is on Kosovo - formerly an autonomous province within the Yugoslav Federation until the revocation of this status in 1989 which eventually led to the conflict of 1998. The intervention of NATO and the UN saw the withdrawal of the Serb forces in 1999 and the creation of the United Nations Interim Administration Mission in Kosovo (UNMIK) to govern the province pending its becoming an independent state. Amongst the functions of UNMIK is the rebuilding of Kosovo's banking and payments infrastructure, the responsibility for which lies with the Banking and Payment Authority of Kosovo (BPK). Set up in 1999, the BPK acts as UNMIK's bank, arranges the transfer of UN payments and functions as a de facto central bank with the exception of issuing currency.

One of the first tasks of the BPK was to replace the Yugoslav dinar with the deutschmark - in widespread unofficial

use for years - as the province's legal tender before the transfer to the euro. Despite the introduction of the euro, the Yugoslav dinar is still used amongst the minority Serb population. The BPK imports its euros indirectly from the European Central Bank via accounts with two of Germany's leading banks. Unfit currency is returned to these banks and forwarded to the ECB for destruction. The level of currency the country needs is determined by monitoring all denominations, both imported and exported.

The BPK is rethinking its approach to importing and exporting its banknotes for both cost efficiency and security reasons. One of the proposed solutions, in its formative stage, is the development of a relationship with euro countries nearest to Kosovo in order to keep currency importation more local.

Another is training staff and the public on authenticating currency in conjunction with the ECB, which is providing the BPK with banknote processing and authentication systems early in 2003.

The introduction and management of new currency is just one of the tasks of the BPK, which has been charged with creating a stable banking and payment framework within a province where not only has the infrastructure been virtually destroyed, but where public confidence in banks has all but collapsed. The creation of an effective regulatory environment, automation of back and front-end banking operations, the development of computer-based payments, building staff capacity, training local bank supervisors, security of distribution and communications and supervising and licensing commercial banks (of which there are now seven) are all part of the BPK's brief.

The BPK has been congratulated by a World Bank Report for its progress to date. But with the banking system still in its infancy, and indeed the sovereignty of Kosovo as a whole, there is still much work to be done.

Contact: BPK, Pristina, Kosovo. Phone +38 501 395; www.bpk-kos.org
UNMIK - www.unmikonline.org

FACT FILE

- **Area: 10,900 sq km**
- **Population: 2.1 million, approximately 90% of whom are ethnic Albanians and the remaining 10% Serbs**
- **GDP: 2001 - €1.5 billion (source: IMF)**

Company and Market Round-Up

Brazil Contract for Louisenthal

The Brazilian Government is reported to have completed a deal with Papierfabrik Louisenthal, the paper-making subsidiary of Giesecke and Devrient, to supply it with long-life banknote paper. The Banco Central do Brasil replaces between 800 million and one billion notes each year, and the long-life paper promises to reduce this number significantly.

New Web Press for Algeria

The Algerian print works - l'Hotel des Monnaies de la Banque de l'Algérie - has acquired a third web press from German manufacturer Goebel, making it the world's largest user of web printing technology for banknote production.

Interim Results for De La Rue

De La Rue has announced turnover for

the half year of £270M, down from £295M in the same period last year. Improved order books in the Cash Systems and Currency Divisions are forecast to improve the company's second half performance.

3rd Quarter Results for CBN

Ottawa-based banknote printer Canadian Bank Note has increased earnings for the third quarter of its fiscal year by C\$1.2M to C\$1.4M, although sales were down by C\$1M to C\$27M. Overall turnover for the year to date stands at C\$77.4M, of which banknotes accounted for C\$17.7M.

Paper Deal for Crane

US banknote paper manufacturer Crane & Co has been awarded a new four-year deal worth over \$350M for the supply of paper to the US Bureau of Engraving and Printing.

Bundesdruckerei Restructures

The new management at Bundesdruckerei, the former German state printer, is embarking on an ambitious cost-cutting and restructuring plan to compensate for the decline in the company's business and to complete its transition from a state to a commercial enterprise. Bundesdruckerei's current difficulties were precipitated by the collapse of the market for its smart card division Orga, and exacerbated by the decline in its banknote business following the boom of euro production. Turnover is predicted to drop from €316M in 2001 to €210M in 2002, and again to €196M in 2003. The new measures are designed to reduce personnel and material costs and streamline the organisation to ensure greater flexibility and productivity.

CHARTER SUBSCRIBER PROFILE

Travelex Currency Services

Travelex Currency Services (TCS) is the world's largest provider of outsourced travel money and fulfilment services. It is part of the \$25 billion Travelex Group, which in March 2001 acquired Thomas Cook Global & Financial Services, and is 20% owned by the The Royal Bank of Scotland.

TCS supplies foreign currency to customers including some of the world's leading high street banks and travel organisations, many of which view the provision of foreign currency to their customers as non-core. With the introduction of the euro and on-going price sensitivity, they are increasingly outsourcing this function to specialists such as TCS which, as a non bank or travel company, does not compete with its customers in providing core banking products. They benefit by not having contend with the storage, processing and distribution of foreign currency to their own customers – individual and corporate – from their branches and offices, but can nevertheless continue to support these customers through the services of TCS and the economies of scale this brings.

Thirty Thousand Orders Per Day Per Centre

TCS services its customers through its five international cash centres in Amsterdam, Paris, Frankfurt and the UK, each with the capacity to handle up to 30,000 orders for foreign currency per day. They are equipped with technology which enables workloads to be switched between locations to handle seasonal and intra-day swings in volume, plus new customers' orders, with maximum efficiency and speed.

TCS has invested in technology to provide end-to-end computerised processing from order capture through to despatch, backed up by a track and trace system, contingency plans, strict service level agreements and dedicated customer service centres. Following the calculation of exchange rates which are disseminated to its customers, TCS captures orders on-line or via its call centres and then processes, dispenses fulfils and despatches these orders through an automated flow line which dispenses and collates the notes, wraps in tamper evident packages and delivers these to the mailing automation system. Orders are typically turned around within 24 hours for despatch to the



branches and offices of the high street banks and travel organisations or direct to the individuals or companies who are the latter's customers.

In addition to its retail service to global banks and financial institutions, TCS also processes bulk consignments of currencies on behalf of The Royal Bank of Scotland, which holds custodial arrangements with several central banks.

As a service supplier, TCS prides itself on its technology and the fact that no other currency fulfilment business has the same level of automation in operations. In addition to advanced technology, its approach is based on innovative management, a highly-trained workforce and its continuing investment in technology, premises and people.

A Major Global Operator

The company also benefits from being part of the Travelex Group, a major global operator in all areas of foreign currency and cash handling. Travelex has the world's largest network of retail foreign exchange outlets, operates ATMs worldwide, is the world's second largest issuer of travellers cheques as well as a leader in prepaid travel cards and the third largest provider of retail travel insurance in North America. It is also the world's largest non-bank provider of corporate foreign exchange and payment solutions and now provides international cash transfers for consumers in a rapidly-growing market.

TCS' customers currently include The Royal Bank of Scotland, NatWest Bank, Barclays Bank, The Co-Operative Bank, Lunn Poly, Thomas Cook, Rabobank, Deutsche Bank, Alliance and Leicester, Nationwide and the National Australia Group. And with additional outsourcing travel money services in North America and Australasia, TCS is now looking to consolidate and build its position as world leader in the field of travel money fulfilment and support services.

For further information, please contact
Travelex Currency Services
Telephone: +44 (0) 1276 462405
Fax: +44 (0) 1276 462409
www.travelex.com

Banknotes Coming in 2003

Some of the new notes to look out for in the coming year include:

Japanese Yen: for the first time in 20 years the Bank of Japan is redesigning the ¥1000, ¥5000 and ¥10,000 notes, which are due to be introduced in late 2003 or 2004. The new designs are aimed at thwarting counterfeiting (which rose sharply in 2002) and will include pearlescent inks, latent images, OVDs and bar watermarks amongst other security features. They will also provide economic stimulus, as new vending and cash processing machines and systems will be required. There are currently 10 billion of these denominations in circulation.

Canadian Dollars: part of the Canadian Journey series, the new C\$50, C\$100 and C\$500 notes will feature a range of additional features both for enhanced security and to aid the visually-impaired. (Also see article on page 12).

Moroccan Dirhams: The Moroccan central bank - Bank Al-Maghrib - is planning a complete new series of banknotes for 2003. The current series was introduced in 1987.

New Sudanese Pounds: the Sudan People's Liberation Movement/Army has announced a separate currency for use in the southern part of the country, which is currently at war with the regime in Khartoum. The New Sudan pound will be issued by the Bank of New Sudan in denominations of 1, 5, 10, 25, 50, 100 and 200 pounds, with coins denominated in piastas, and will replace the Sudan dinar, which circulates in the north of the country.

US Dollars: the US Bureau of Engraving and Printing will be issuing new \$20, \$50 and \$100 bills in 2003. For the first time since 1862, each denomination will be printed in different colours. It is hoped that adding subtle colour to the traditional 'greenback' will help curb the flow of counterfeit notes in circulation worldwide and aid identification of the different denominations. The new series - called NexGen - will begin to enter circulation this autumn, starting with the \$20 note.

CONFERENCES & PUBLICATIONS

Banknotes of the World 2003

Banknotes of the World 2003 - an annual reference catalogue of currencies in circulation in 240 countries and territories - is now available from Intercrim-Press. Published in Russian and English, the catalogue includes more than 3,000 colour illustrations showing the front and reverse of each banknote, details of the main security features, background information and a description of the

money circulation in each country. Compiled on the basis of information collected by the International Currency Identification Service of Germany, Banknotes of the World 2003 is the third edition in the series and is priced at \$150 (excluding postage). More information on this and Intercrim-Press' bulletins on money circulation around the world can be obtained from www.icpress.ru.

Optical Document Security

Optical Document Security is a multimedia training presentation on optical security covering, amongst others, security substrates (including watermarks, threads, fibres and perforations), intaglio print, digital anti-copy devices, diffraction and interference-based technologies and foils (metallic, iridescent and holographic). The basic principles of each are described, along with design considerations, their physical, physiological and psychological security aspects and a comparative analysis of their advantages and limitations.

Optical Document Security has been compiled and is narrated by Rudolf

van Renesse, former senior research engineer at the Optics Department of TNO Institute of Applied Physics in the Netherlands, and is aimed at technical personnel within the document security community (for whom an understanding of basic optics is recommended). It is fully illustrated throughout with examples and demonstrations, and comprising nearly 200 slides, runs for three hours. The price is \$475 and the presentation is available either on CD-ROM or as a downloadable file. Further information, including a sample viewing of the content, is available from www.spie.org/app/education/index.

Banknote 2003

Banknote 2003 - held February 2-5 in Washington DC - is the third bi-annual conference on this subject from Gorham International and aims to provide a specialised forum for all those involved in banknotes to discuss emerging trends and technologies within the industry.

Speakers from a wide range of private and government organizations

will present papers on topics including the continuing growth of banknotes; banknote design; latest advances in counterfeit deterrent technologies; solutions to digital counterfeiting; the potential role for commercial banks in currency issue and circulation; modernisation of cash handling operations and much more. The keynote speaker will be Peter Fisher, Under Secretary, Domestic Finance at the US Department of the Treasury and the conference will be supported by an exhibition from some of the leading suppliers to the industry.

Two tours are being organized as part of the conference. One is to the US Federal Reserve Bank of Richmond, which covers the Fifth Federal Reserve District of the US and whose Currency Technology Office provides support to the entire Federal Reserve System in the development and operation of automated currency processing and authentication systems. The other is to the US Bureau of Engraving and Printing - the powerhouse of the US currency system and printer of billions of banknotes each year.

Further information, including a full agenda and details on how to register, can be obtained from www.banknote2003.com.

DIARY January-June 2003

Security Printing - Russia/CIS & Central/Eastern Europe

January 23-24, 2003

St Petersburg, Russia

Phone: +44 1963 31603

www.pyrabelisk.com

Banknote 2003

February 2-5, 2003

Washington DC, USA

Phone: +1 703 518 8897

www.banknote2003.com

African Banknote Printers Conference

February 23-27, 2003

Khartoum, Sudan

(by invitation only)

CeBIT 2003

March 12-19, 2003

Hanover, Germany

www.cebit.de

Asian Banker Summit

April 2-4, 2003

Hong Kong

Phone: +65 6236 6503

www.asianbankerforums.com

ICCOS 2003

May 4-6, 2003

New York, USA

Phone: +1 817 306 1144

www.iccos.com

Intergraf

May 14-16, 2003

Montreux, Switzerland

Phone: +32 2 230 8646

www.intergraf.org

ESTA (European Security Transport Association)

May 17-20, 2003

Paris, France

jgodefr@attglobal.net

CeBIT America 2003

June 18-20, 2003

New York, USA

www.cebit-america.com

In the Next Issue

- On the Record - Tom Ferguson, Bureau of Engraving and Printing
- Debates Corner - banknote substrates: paper or polymer
- Technology Profile - retail systems
- Country Profile - Indonesia
- Case Study - Norway's cash distribution system
- Feature - the note/coin boundary
- Whatever Happened To Stevens Graphics



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IN THE NEWS



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Canada To Switch To Mould-Made Paper

The Bank of Canada is adopting cylinder mould-made banknote paper for the C\$20, C\$50 and C\$100 notes, all of which will be introduced as part of the new Canadian Journey series within the next 12 months. As part of this series, the C\$1,000 is being withdrawn because, as the Bank says, *'it is only used by drug dealers and criminals'*.

The two low denominations - the C\$5 and C\$10 - will continue to be printed on watermarked fourdrinier paper from Spixel - the Canadian paper manufacturer. Both notes were recently

redesigned and put into circulation - the C\$10 in January 2001 and the C\$5 in March 2002.

The Canadian Journey series is being produced to enhance the security of Canada's banknotes, and to introduce new features for the visually-impaired. These include a tactile feature comprising raised dots and a code which can be picked up by hand-held readers. The new high denomination notes will also contain watermarks, windowed colour-shift security threads and holographic stripes.

Mexico Goes for Plastic

Mexico is trying out polymer banknote substrates for the first time with the new Peso 20 note, its most commonly-used denomination, which is being produced on *Guardian*[®] polymer from Securrency. It will take up to a year to replace the 130 million old Peso 20 notes and, if the new substrate proves successful, the Bank of Mexico will consider converting the Peso 50, 100, 200 and 500 notes to polymer as well.

This is the second use of Guardian in Latin America - the first being in 2000 when a commemorative polymer Reais 10 note was issued in Brazil to mark the 500th anniversary of Spain's discovery of the country.

Polymer substrates are 2-3 times as expensive as their paper counterparts and present challenges in the printing process, but it is claimed that they last four times as long in circulation.

India Automates Currency Processing

The Reserve Bank of India (RBI) is stepping up the quality of notes in circulation and reducing its operating costs by virtually doubling the number of high speed banknote processing systems in operation.

Within a year of awarding a contract for the supply of 22 BPS 1000 banknote processing systems to Munich-based Giesecke and Devrient (G&D), the RBI has signed a multi-million euro deal for a further 20 systems, plus a seven-year maintenance contract.

The BPS 1000 systems are capable of counting, authenticating and sorting currency by denomination and fitness at the rate of 100,000 banknotes per hour. On completion of the installation of the additional systems, 16 of the RBI's regional offices will be equipped to perform automatic banknote processing which will examine notes for authenticity and fitness.

In addition to its regional offices, the RBI also plans for the country's commercial banks to play a more active role in the currency automation process. To support this, G&D is expanding its service infrastructure within the country to offer 30 service representatives operating from its base in New Delhi.

India is one of the world's largest users of banknotes, with 16 billion notes issued each year (approximately 15% of the world's total). The volumes are such that, despite having a paper mill and four print works of its own, the RBI has to outsource the production of a large proportion of its paper and occasionally some of its banknote printing. An international tender will be issued shortly for all but the lowest denominations of banknote paper and, it is thought, some denominations of banknotes.

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